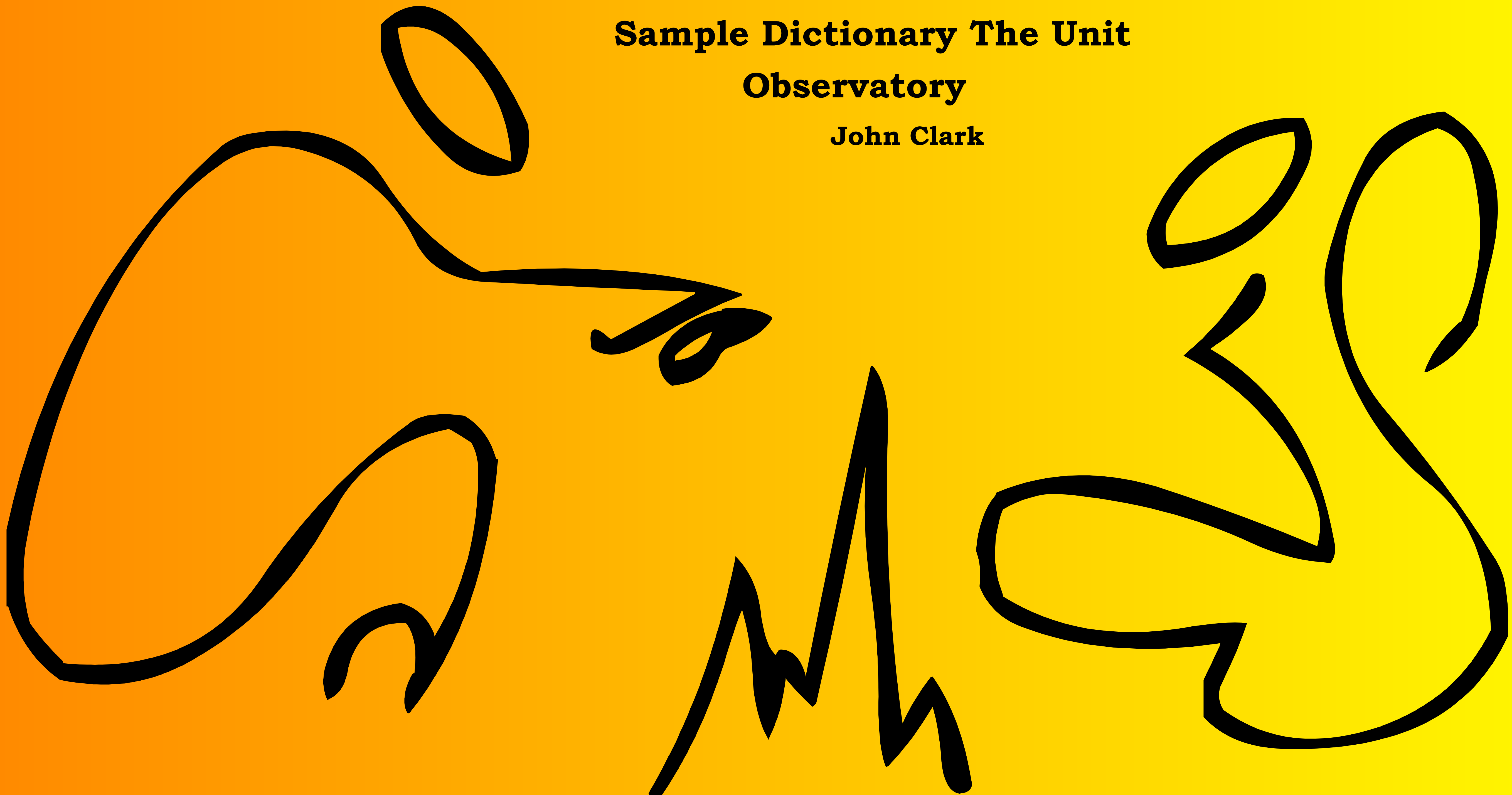
Basic Analog Grammar

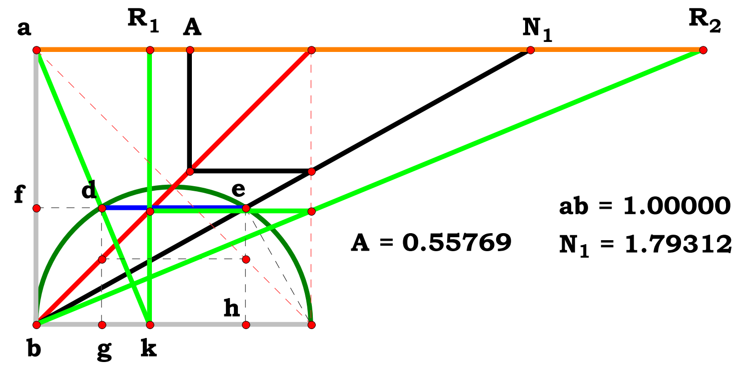
Sample Dictionary The Unit Observatory

John Clark



John 312

3OBT1R0



$A = 0.55769$

$ab = 1.00000$

$N_1 = 1.79312$

$R_1 = 0.41286$

$\frac{1}{(N_1^2-N_1)+1} = 0.41286$

$\frac{A^2}{(A^2-A)+1} = 0.41286$

$R_1-\frac{1}{(N_1^2-N_1)+1} = 0.00000$

$R_1-\frac{A^2}{(A^2-A)+1} = 0.00000$

$\frac{A^2}{(A^2-A)+1}-\frac{1}{(N_1^2-N_1)+1} = 0.00000$

$R_2 = 2.42216$

$\frac{(A^2-A)+1}{A^2} = 2.42216$

$R_2-\frac{(A^2-A)+1}{A^2} = 0.00000$

Given.

Unit. $ab := 1$

$N_1 := 1.79312$

$A := \frac{1}{N_1}$

Descriptions.

$bn := \sqrt{N_1^2+1}$ $\quad be := \frac{N_1}{bn}$ $\quad eh := \frac{be}{bn}$

$ce := \frac{1}{bn}$ $\quad ch := \sqrt{ce^2 - eh^2}$ $\quad bg := ch$

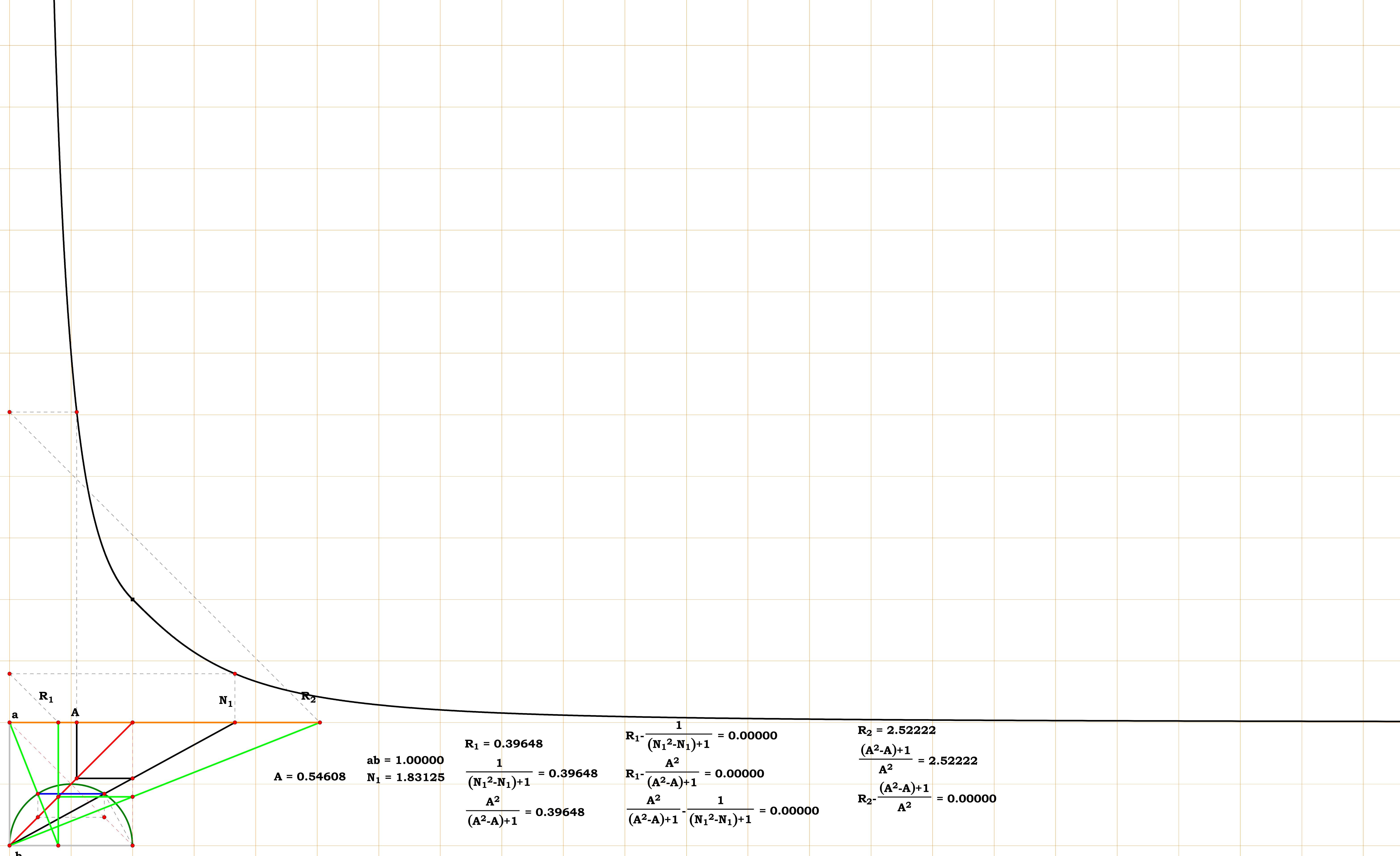
$R_1 := \frac{bg}{1-eh}$ $\quad R_2 := \frac{1}{R_1}$ $\quad R_1 = 0.412855$

Definitions.

$$R_1 - \frac{1}{N_1^2 - N_1 + 1} = 0$$

$$N_1 - \frac{1}{A} = 0$$

$$R_1 - \frac{A^2}{A^2 - A + 1} = 0 \qquad R_2 - \frac{A^2 - A + 1}{A^2} = 0$$



$A = 0.54608$

$ab = 1.00000$

$N_1 = 1.83125$

$R_1 = 0.39648$

$$\frac{1}{(N_1{}^2-N_1)+1} = 0.39648$$

$$\frac{A^2}{(A^2-A)+1} = 0.39648$$

$$R_1-\frac{1}{(N_1{}^2-N_1)+1} = 0.00000$$

$$R_1-\frac{A^2}{(A^2-A)+1} = 0.00000$$

$$\frac{A^2}{(A^2-A)+1}-\frac{1}{(N_1{}^2-N_1)+1} = 0.00000$$

$R_2 = 2.52222$

$$\frac{(A^2-A)+1}{A^2} = 2.52222$$

$$R_2-\frac{(A^2-A)+1}{A^2} = 0.00000$$

3OBT1R1

Given.

Unit. $ab := 1$

$N_1 := 1.85377$

$A := \dfrac{1}{N_1}$

Descriptions.

$be := \dfrac{1}{N_1^{\,2} - \left(\sqrt{N_1^{\,2}}\right) + 1}$ $\quad ce := 1 - be$

$de := \sqrt{be \cdot ce}$ $\quad bf := \dfrac{be}{1 - de}$ $\quad R_1 := bf$

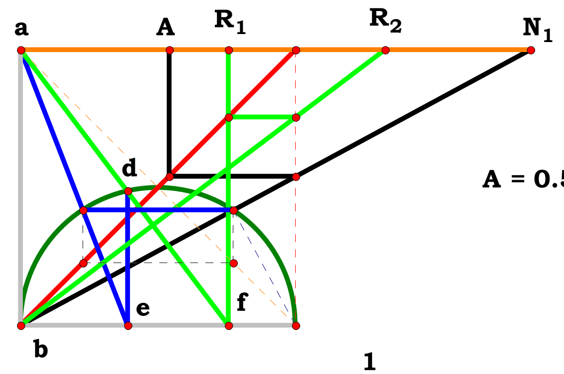
$R_2 := \dfrac{1}{R_1}$ $\quad R_1 = 0.754921$

Definitions.

$$R_1 - \frac{1}{\left(N_1^{\,2} - N_1 - \sqrt{N_1^{\,2} - N_1} + 1\right)} = 0$$

$$N_1 - \frac{1}{A} = 0$$

$$R_1 - \frac{A^2}{A^2 - A - A \cdot \sqrt{1 - A} + 1} = 0$$



$A = 0.53944$

$ab = 1.00000$

$N_1 = 1.85377$

$$R_1 - \frac{1}{\left(N_1^2 - N_1 - \sqrt{N_1^2 - N_1}\right) + 1} = 0.00000$$

$$R_1 - \frac{A^2}{\left(A^2 - A - A \cdot \sqrt{1-A}\right) + 1} = 0.00000$$

$$\frac{A^2}{\left(A^2 - A - A \cdot \sqrt{1-A}\right) + 1} - \frac{1}{\left(N_1^2 - N_1 - \sqrt{N_1^2 - N_1}\right) + 1} = 0.00000$$

$R_1 = 0.75493$

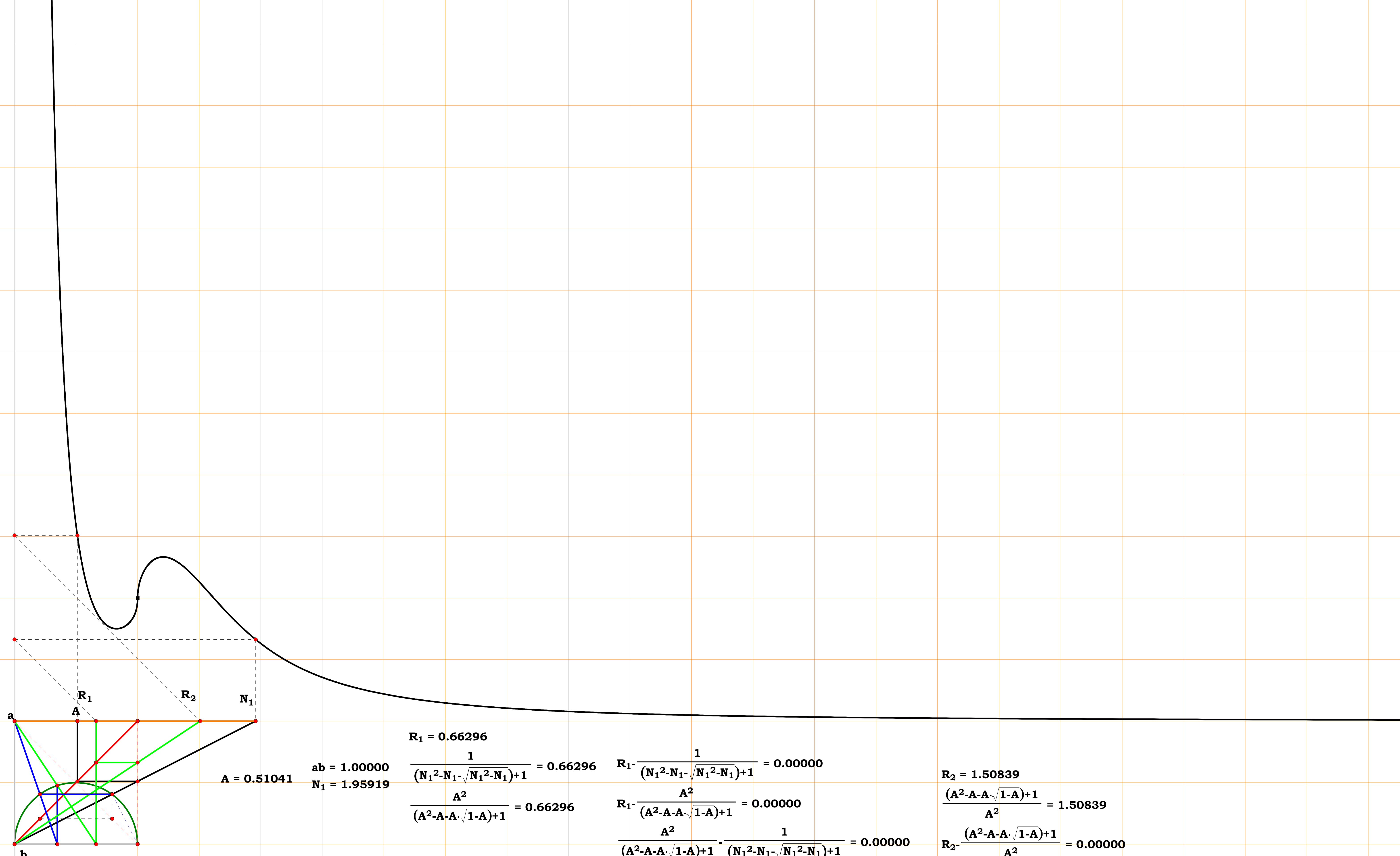
$$\frac{1}{\left(N_1^2 - N_1 - \sqrt{N_1^2 - N_1}\right) + 1} = 0.75493$$

$$\frac{A^2}{\left(A^2 - A - A \cdot \sqrt{1-A}\right) + 1} = 0.75493$$

$R_2 = 1.32463$

$$\frac{\left(A^2 - A - A \cdot \sqrt{1-A}\right) + 1}{A^2} = 1.32463$$

$$R_2 - \frac{\left(A^2 - A - A \cdot \sqrt{1-A}\right) + 1}{A^2} = 0.00000$$



$A = 0.51041$

$ab = 1.00000$

$N_1 = 1.95919$

$R_1 = 0.66296$

$$\frac{1}{\left(N_1{}^2 - N_1 - \sqrt{N_1{}^2 - N_1}\right) + 1} = 0.66296$$

$$\frac{A^2}{\left(A^2 - A - A \cdot \sqrt{1 - A}\right) + 1} = 0.66296$$

$$R_1 - \frac{1}{\left(N_1{}^2 - N_1 - \sqrt{N_1{}^2 - N_1}\right) + 1} = 0.00000$$

$$R_1 - \frac{A^2}{\left(A^2 - A - A \cdot \sqrt{1 - A}\right) + 1} = 0.00000$$

$$\frac{A^2}{\left(A^2 - A - A \cdot \sqrt{1 - A}\right) + 1} - \frac{1}{\left(N_1{}^2 - N_1 - \sqrt{N_1{}^2 - N_1}\right) + 1} = 0.00000$$

$R_2 = 1.50839$

$$\frac{\left(A^2 - A - A \cdot \sqrt{1 - A}\right) + 1}{A^2} = 1.50839$$

$$R_2 - \frac{\left(A^2 - A - A \cdot \sqrt{1 - A}\right) + 1}{A^2} = 0.00000$$

3OBT1R2

Given.

Unit. $ab := 1$

$N_1 := 1.71451$

$A := \frac{1}{N_1}$

Descriptions.

$bn := \sqrt{1 + N_1^{\,2}}$ $\quad bg := \frac{N_1}{bn}$ $\quad bh := \frac{N_1 \cdot bg}{bn}$

$bf := 1 - bh$ $\quad bd := \frac{bg}{bn}$

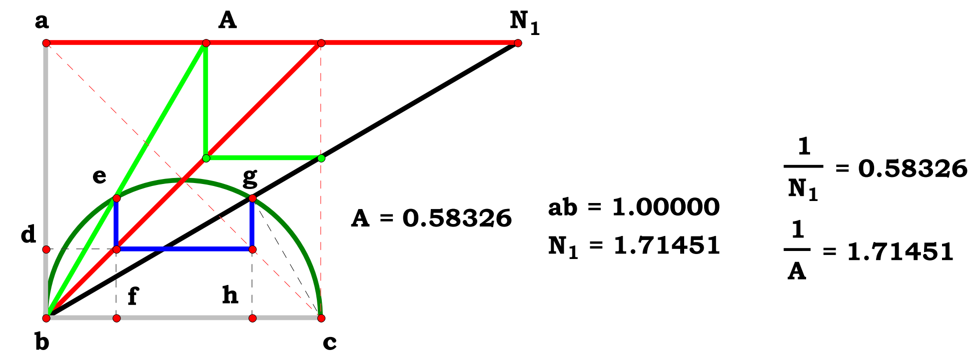
$R_1 := \frac{bf}{bd}$ $\quad R_2 := \frac{1}{R_1}$ $\quad R_1 = 0.583257$

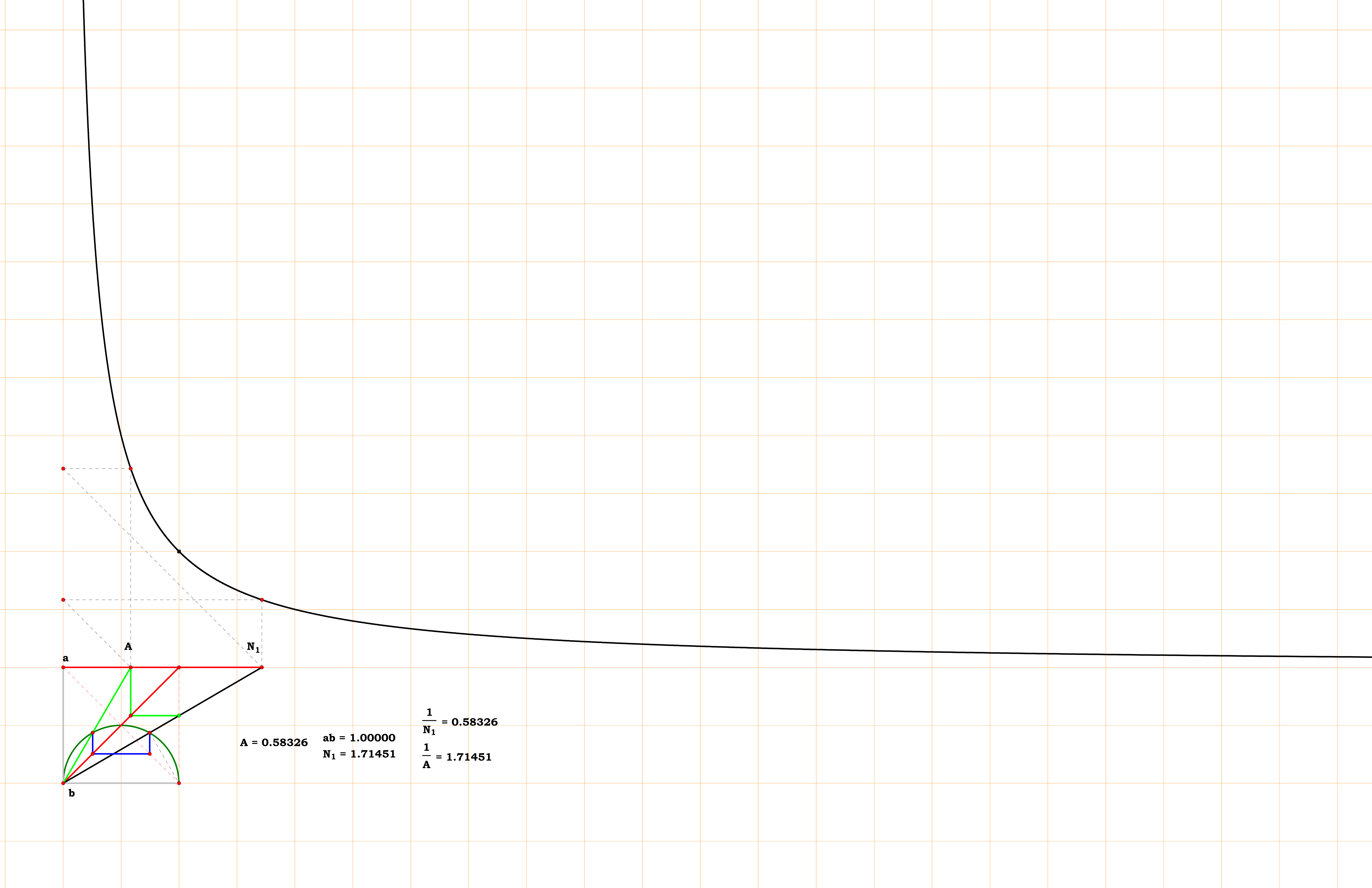
Definitions.

$R_1 - \frac{1}{N_1} = 0$

$N_1 - \frac{1}{A} = 0$

$R_1 - A = 0 \qquad R_2 - \frac{1}{A} = 0$





a
A
N_1
b
A = 0.58326
ab = 1.00000
N_1 = 1.71451
$\frac{1}{N_1}$ = 0.58326
$\frac{1}{A}$ = 1.71451

3OBT1R3

Given.

Unit. $ab := 1$

$N_1 := 1.97980$

$A := \dfrac{1}{N_1}$

Descriptions.

$bn := \sqrt{1 + N_1^{\,2}} \quad bj := \dfrac{N_1}{bn} \quad bk := \dfrac{N_1 \cdot bj}{bn}$

$bh := 1 - bk \quad bg := \dfrac{bk}{N_1} \quad bf := \dfrac{bh}{1 - bg}$

$ef := \sqrt{bf \cdot (1 - bf)} \quad R_1 := \dfrac{bf}{ef}$

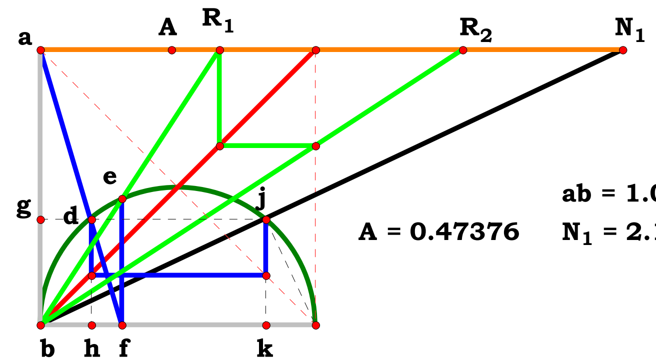
$R_2 := \dfrac{1}{R_1} \quad R_1 = 0.717994$

Definitions.

$$R_1 - \frac{1}{\sqrt{N_1^{\,2} - N_1}} = 0$$

$$N_1 - \frac{1}{A} = 0$$

$$R_1 - \frac{A}{\sqrt{(1 - A)}} = 0 \qquad R_2 - \frac{\sqrt{(1 - A)}}{A} = 0$$



$A = 0.47376$

$ab = 1.00000$

$N_1 = 2.11078$

$R_1 = 0.65308$

$\dfrac{1}{\sqrt{N_1^2 - N_1}} = 0.65308$

$\dfrac{A}{\sqrt{1-A}} = 0.65308$

$R_1 - \dfrac{1}{\sqrt{N_1^2 - N_1}} = 0.00000$

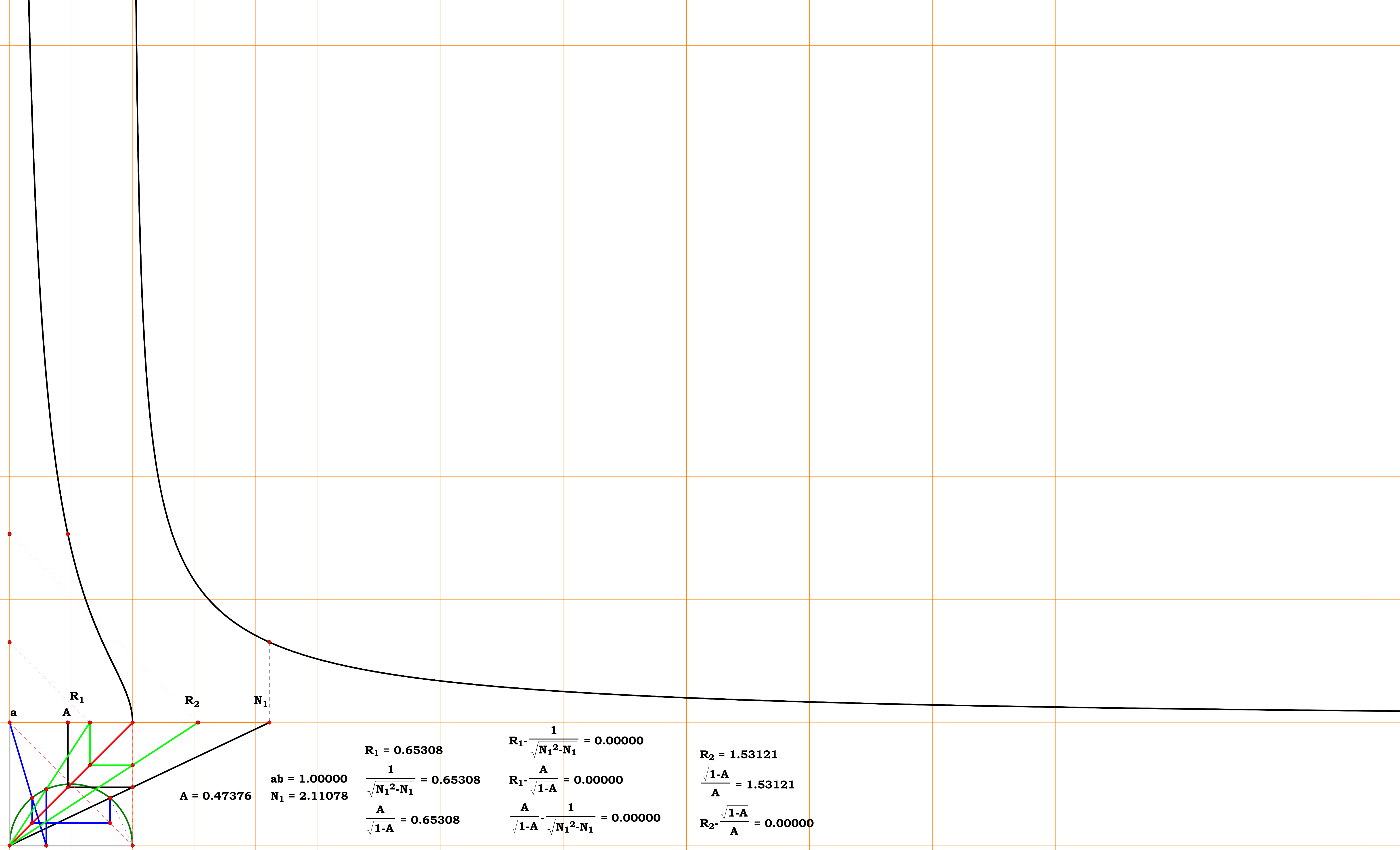
$R_1 - \dfrac{A}{\sqrt{1-A}} = 0.00000$

$\dfrac{A}{\sqrt{1-A}} - \dfrac{1}{\sqrt{N_1^2 - N_1}} = 0.00000$

$R_2 = 1.53121$

$\dfrac{\sqrt{1-A}}{A} = 1.53121$

$R_2 - \dfrac{\sqrt{1-A}}{A} = 0.00000$



$A = 0.47376$

$ab = 1.00000$

$N_1 = 2.11078$

$R_1 = 0.65308$

$\frac{1}{\sqrt{N_1{}^2 - N_1}} = 0.65308$

$\frac{A}{\sqrt{1-A}} = 0.65308$

$R_1 - \frac{1}{\sqrt{N_1{}^2 - N_1}} = 0.00000$

$R_1 - \frac{A}{\sqrt{1-A}} = 0.00000$

$\frac{A}{\sqrt{1-A}} - \frac{1}{\sqrt{N_1{}^2 - N_1}} = 0.00000$

$R_2 = 1.53121$

$\frac{\sqrt{1-A}}{A} = 1.53121$

$R_2 - \frac{\sqrt{1-A}}{A} = 0.00000$

3OBT1R4

Given.

Unit. $ab := 1$

$N_1 := 2.46859$

$A := \frac{1}{N_1}$

Descriptions.

$$bd := \frac{1}{N_1^2 - \sqrt{N_1^2 - \sqrt{N_1^2 - \sqrt{N_1^2}}} + 1}$$

$cd := 1 - bd \quad de := \sqrt{bd \cdot cd}$

$bf := \frac{bd}{1 - de} \quad R_1 := bf$

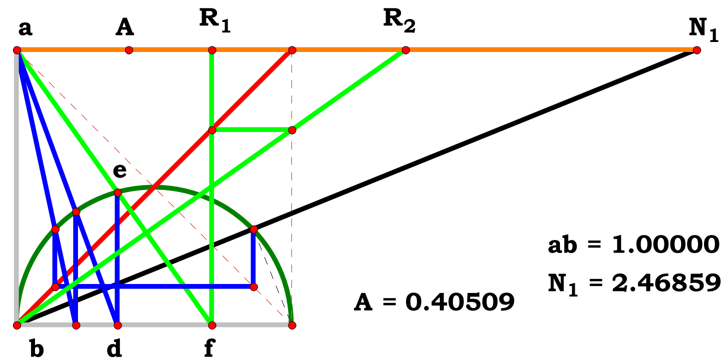
$R_2 := \frac{1}{R_1} \quad R_1 = 0.70956$

Definitions.

$$R_1 - \frac{1}{N_1^2 - N_1 - \sqrt{N_1^2 - N_1 - \sqrt{N_1^2 - N_1}} - \sqrt{N_1^2 - N_1} + 1} = 0$$

$$N_1 - \frac{1}{A} = 0$$

$$R_1 - \frac{A^2}{A^2 - A\cdot\sqrt{1 - A\cdot\sqrt{1-A} - A} - A - A\cdot\sqrt{1-A} + 1} = 0 \qquad R_2 - \frac{A^2 - A\cdot\sqrt{1 - A\cdot\sqrt{1-A} - A} - A - A\cdot\sqrt{1-A} + 1}{A^2} = 0$$



$A = 0.40509$

$ab = 1.00000$

$N_1 = 2.46859$

$R_1 = 0.70956$

$$\frac{1}{\left(N_1^2 - N_1 - \sqrt{N_1^2 - N_1 - \sqrt{N_1^2 - N_1}} - \sqrt{N_1^2 - N_1}\right) + 1} = 0.70956$$

$$\frac{A^2}{\left(\left(A^2 - A\cdot\sqrt{1 - A\cdot\sqrt{1-A} - A} - A - A\cdot\sqrt{1-A}\right) + 1\right)} = 0.70956$$

$$R_1 - \frac{1}{\left(N_1^2 - N_1 - \sqrt{N_1^2 - N_1 - \sqrt{N_1^2 - N_1}} - \sqrt{N_1^2 - N_1}\right) + 1} = 0.00000$$

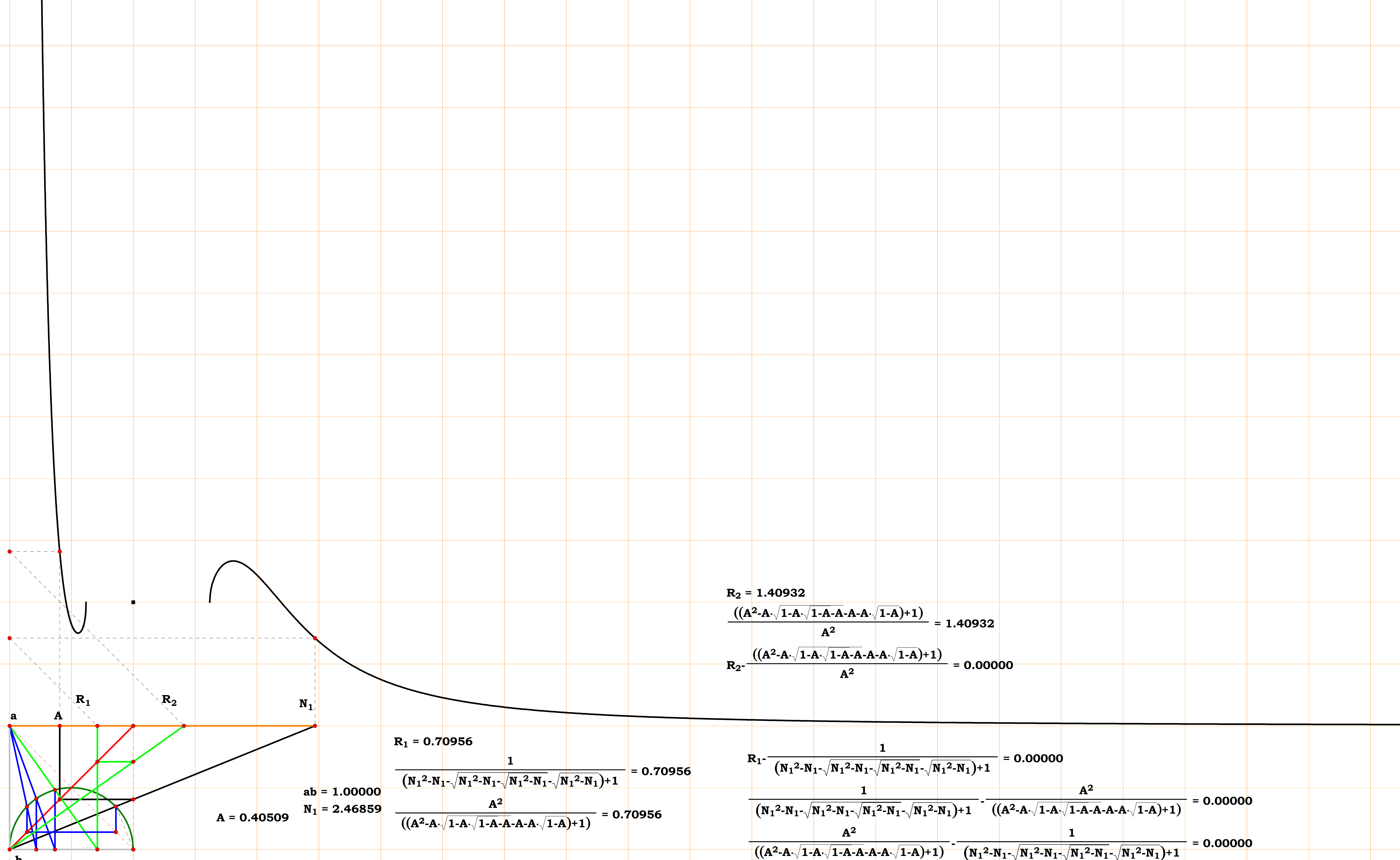
$$\frac{1}{\left(N_1^2 - N_1 - \sqrt{N_1^2 - N_1 - \sqrt{N_1^2 - N_1}} - \sqrt{N_1^2 - N_1}\right) + 1} - \frac{A^2}{\left(\left(A^2 - A\cdot\sqrt{1 - A\cdot\sqrt{1-A} - A} - A - A\cdot\sqrt{1-A}\right) + 1\right)} = 0.00000$$

$$\frac{A^2}{\left(\left(A^2 - A\cdot\sqrt{1 - A\cdot\sqrt{1-A} - A} - A - A\cdot\sqrt{1-A}\right) + 1\right)} - \frac{1}{\left(N_1^2 - N_1 - \sqrt{N_1^2 - N_1 - \sqrt{N_1^2 - N_1}} - \sqrt{N_1^2 - N_1}\right) + 1} = 0.00000$$

$R_2 = 1.40932$

$$\frac{\left(\left(A^2 - A\cdot\sqrt{1 - A\cdot\sqrt{1-A} - A} - A - A\cdot\sqrt{1-A}\right) + 1\right)}{A^2} = 1.40932$$

$$R_2 - \frac{\left(\left(A^2 - A\cdot\sqrt{1 - A\cdot\sqrt{1-A} - A} - A - A\cdot\sqrt{1-A}\right) + 1\right)}{A^2} = 0.00000$$



$R_2 = 1.40932$

$$\frac{\left(\left(A^2-A\cdot\sqrt{1-A\cdot\sqrt{1-A}-A}-A-A\cdot\sqrt{1-A}\right)+1\right)}{A^2} = 1.40932$$

$$R_2-\frac{\left(\left(A^2-A\cdot\sqrt{1-A\cdot\sqrt{1-A}-A}-A-A\cdot\sqrt{1-A}\right)+1\right)}{A^2} = 0.00000$$

$R_1 = 0.70956$

$$\frac{1}{\left(N_1^2-N_1-\sqrt{N_1^2-N_1-\sqrt{N_1^2-N_1}-\sqrt{N_1^2-N_1}}\right)+1} = 0.70956$$

$ab = 1.00000$

$N_1 = 2.46859$

$A = 0.40509$

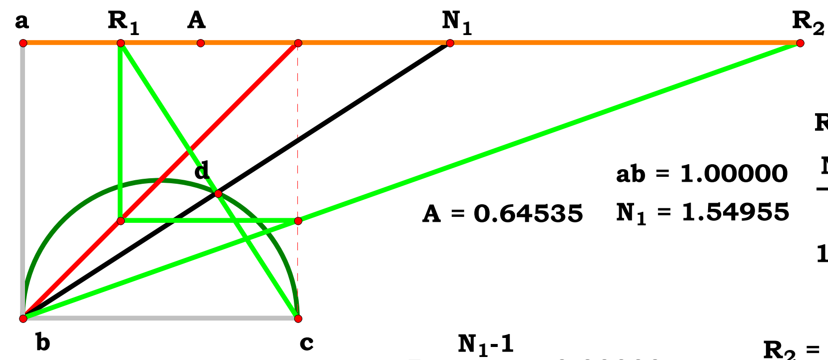
$$\frac{A^2}{\left(\left(A^2-A\cdot\sqrt{1-A\cdot\sqrt{1-A}-A}-A-A\cdot\sqrt{1-A}\right)+1\right)} = 0.70956$$

$$R_1-\frac{1}{\left(N_1^2-N_1-\sqrt{N_1^2-N_1-\sqrt{N_1^2-N_1}-\sqrt{N_1^2-N_1}}\right)+1} = 0.00000$$

$$\frac{1}{\left(N_1^2-N_1-\sqrt{N_1^2-N_1-\sqrt{N_1^2-N_1}-\sqrt{N_1^2-N_1}}\right)+1}-\frac{A^2}{\left(\left(A^2-A\cdot\sqrt{1-A\cdot\sqrt{1-A}-A}-A-A\cdot\sqrt{1-A}\right)+1\right)} = 0.00000$$

$$\frac{A^2}{\left(\left(A^2-A\cdot\sqrt{1-A\cdot\sqrt{1-A}-A}-A-A\cdot\sqrt{1-A}\right)+1\right)}-\frac{1}{\left(N_1^2-N_1-\sqrt{N_1^2-N_1-\sqrt{N_1^2-N_1}-\sqrt{N_1^2-N_1}}\right)+1} = 0.00000$$

3OBT1R5



$R_1 = 0.35465$

$ab = 1.00000$ $\quad \frac{N_1\text{-}1}{N_1} = 0.35465$

$A = 0.64535$ $\quad N_1 = 1.54955$

$1\text{-}A = 0.35465$

$R_1\text{-}\frac{N_1\text{-}1}{N_1} = 0.00000$ $\quad R_2 = 2.81966$

$R_1\text{-}(1\text{-}A) = 0.00000$ $\quad \frac{1}{(1\text{-}A)} = 2.81966$

$(1\text{-}A)\text{-}\frac{N_1\text{-}1}{N_1} = 0.00000$ $\quad R_2\text{-}\frac{1}{(1\text{-}A)} = 0.00000$

Given.

Unit. $ab := 1$

$N_1 := 1.54955$

$A := \frac{1}{N_1}$

Descriptions.

$BN_1 := \sqrt{N_1^{\,2} + 1} \qquad BD := \frac{N_1}{BN_1}$

$DN_1 := BN_1 - BD \qquad NR := \frac{BN_1 \cdot DN_1}{N_1}$

$R_1 := N_1 - NR \qquad R_1 = 0.354651$

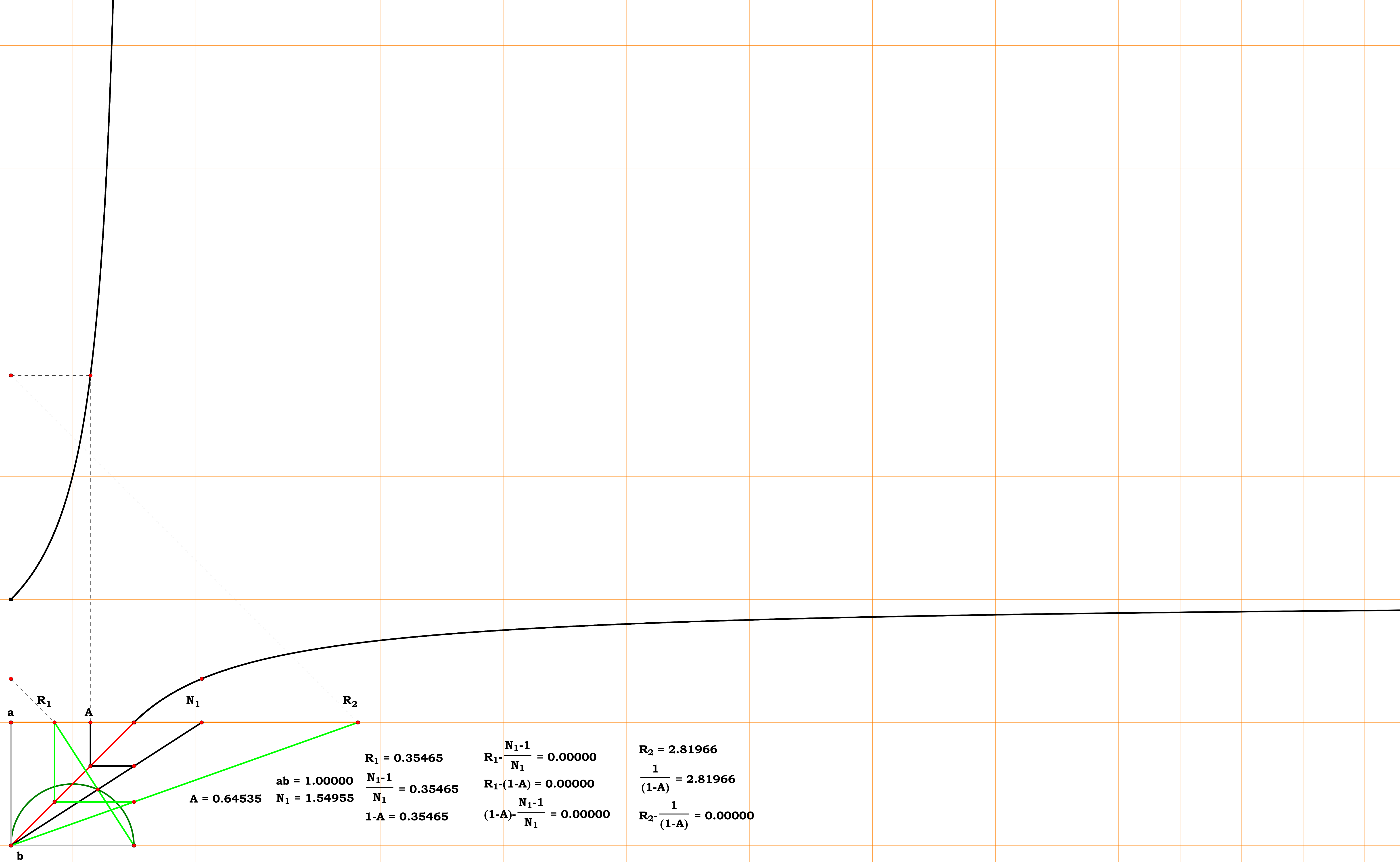
$R_2 := \frac{1}{R_1}$

Definitions.

$$R_1 - \frac{N_1 - 1}{N_1} = 0$$

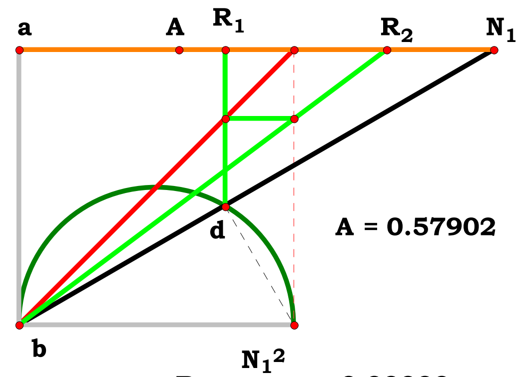
$$N_1 - \frac{1}{A} = 0$$

$$R_1 - (1 - A) = 0 \qquad R_2 - \frac{1}{(1 - A)} = 0$$



a
R1
A
N1
R2
b
R1 = 0.35465
ab = 1.00000
N1 = 1.54955
A = 0.64535
(N1-1)/N1 = 0.35465
1-A = 0.35465
R1-(N1-1)/N1 = 0.00000
R1-(1-A) = 0.00000
(1-A)-(N1-1)/N1 = 0.00000
R2 = 2.81966
1/(1-A) = 2.81966
R2-1/(1-A) = 0.00000

3OBT1R6



$A = 0.57902$

$ab = 1.00000$

$N_1 = 1.72705$

$R_1 = 0.74891$

$\frac{N_1^2}{N_1^2+1} = 0.74891$

$\frac{1}{A^2+1} = 0.74891$

$R_1 - \frac{N_1^2}{N_1^2+1} = 0.00000$

$R_1 - \frac{1}{A^2+1} = 0.00000$

$\frac{1}{A^2+1} - \frac{N_1^2}{N_1^2+1} = 0.00000$

$R_2 = 1.33527$

$A^2+1 = 1.33527$

$R_2-(A^2+1) = 0.00000$

Given.

Unit. $ab := 1$

$N_1 := 1.72705$

$A := \frac{1}{N_1}$

Descriptions.

$bd := \frac{N_1}{\left(N_1^2+1\right)^{\frac{1}{2}}}$ $\quad bn := \sqrt{N_1^2+1}$

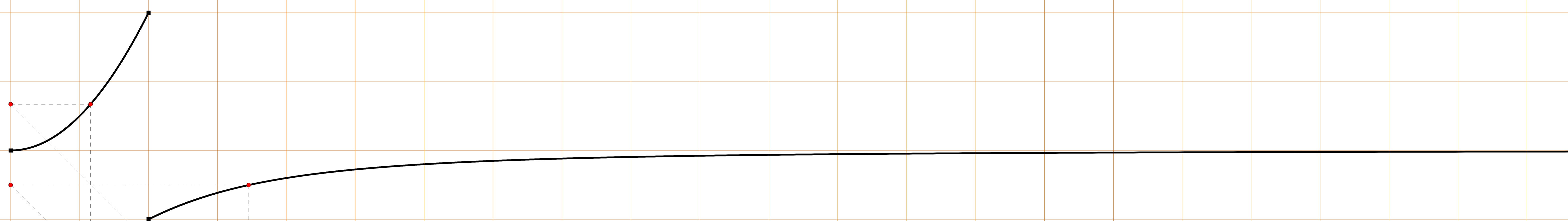
$R_1 := \frac{N_1 \cdot bd}{bn}$ $\quad R_2 := \frac{1}{R_1}$ $\quad R_1 = 0.748914$

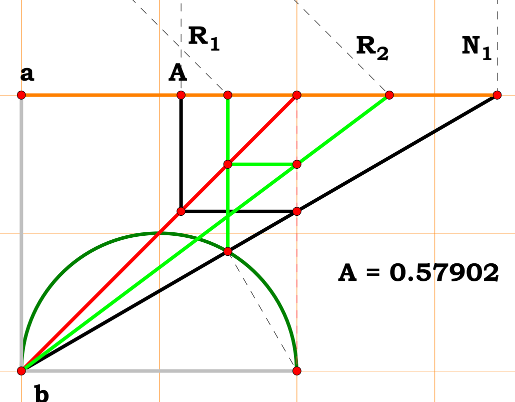
Definitions.

$R_1 - \frac{N_1^2}{N_1^2+1} = 0$

$N_1 - \frac{1}{A} = 0$

$R_1 - \frac{1}{A^2+1} = 0$ $\quad R_2 - \left(A^2+1\right) = 0$





$A = 0.57902$

$ab = 1.00000$

$N_1 = 1.72705$

$R_1 = 0.74891$

$$\frac{N_1^2}{N_1^2+1} = 0.74891$$

$$\frac{1}{A^2+1} = 0.74891$$

$$R_1 - \frac{N_1^2}{N_1^2+1} = 0.00000$$

$$R_1 - \frac{1}{A^2+1} = 0.00000$$

$$\frac{1}{A^2+1} - \frac{N_1^2}{N_1^2+1} = 0.00000$$

$R_2 = 1.33527$

$A^2+1 = 1.33527$

$R_2 - (A^2+1) = 0.00000$

3OBT1R7

Given.

Unit. $ab := 1$

$N_1 := 1.65442 \quad N_2 := 1.47544$

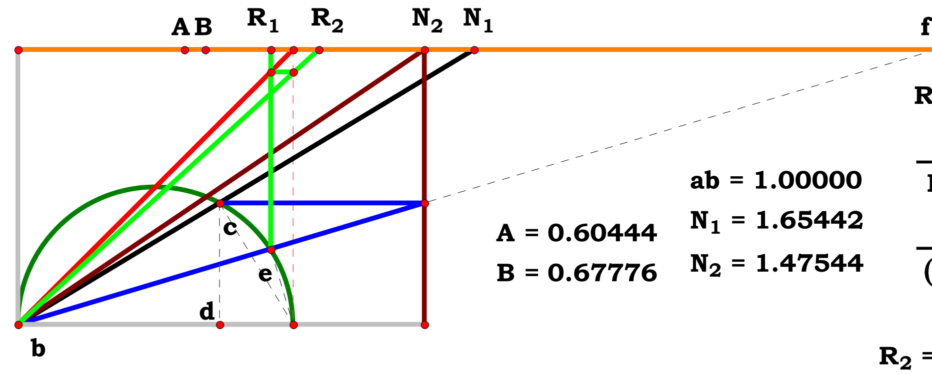
$A := \dfrac{1}{N_1} \quad B := \dfrac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1 + N_1^{\,2}} \quad bc := \dfrac{N_1}{bN_1} \quad cd := \dfrac{bc}{bN_1}$

$af := \dfrac{N_2}{cd} \quad bf := \sqrt{1 + af^2} \quad be := \dfrac{af}{bf}$

$R_1 := af \cdot \dfrac{be}{bf} \quad R_2 := \dfrac{1}{R_1} \quad R_1 = 0.917408$



$A = 0.60444$
$B = 0.67776$

$ab = 1.00000$
$N_1 = 1.65442$
$N_2 = 1.47544$

$R_1 = 0.91741$

$\dfrac{N_2^2 \cdot (N_1^2+1)^2}{N_1^4 \cdot N_2^2 + 2 \cdot N_1^2 \cdot N_2^2 + N_1^2 + N_2^2} = 0.91741$

$\dfrac{(A^2+1)^2}{(A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1)} = 0.91741$

$R_2 = 1.09003$

$\dfrac{(A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1)}{(A^2+1)^2} = 1.09003$

$R_2 - \dfrac{(A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1)}{(A^2+1)^2} = 0.00000$

$R_1 - \dfrac{N_2^2 \cdot (N_1^2+1)^2}{N_1^4 \cdot N_2^2 + 2 \cdot N_1^2 \cdot N_2^2 + N_1^2 + N_2^2} = 0.00000$

$R_1 - \dfrac{(A^2+1)^2}{(A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1)} = 0.00000$

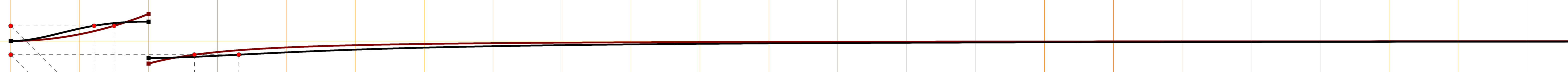
$\dfrac{(A^2+1)^2}{(A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1)} - \dfrac{N_2^2 \cdot (N_1^2+1)^2}{N_1^4 \cdot N_2^2 + 2 \cdot N_1^2 \cdot N_2^2 + N_1^2 + N_2^2} = 0.00000$

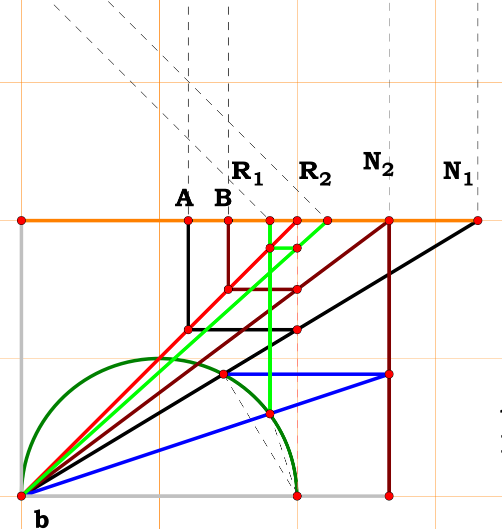
Definitions.

$$R_1 - \frac{N_2^{\,2} \cdot \left(N_1^{\,2} + 1\right)^2}{N_1^{\,4} \cdot N_2^{\,2} + 2 \cdot N_1^{\,2} \cdot N_2^{\,2} + N_1^{\,2} + N_2^{\,2}} = 0$$

$$N_1 - \frac{1}{A} = 0 \qquad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{\left(A^2 + 1\right)^2}{A^4 + A^2 \cdot B^2 + \left(2 \cdot A^2 + 1\right)} = 0 \qquad R_2 - \frac{A^4 + A^2 \cdot B^2 + \left(2 \cdot A^2 + 1\right)}{\left(A^2 + 1\right)^2} = 0$$





$A = 0.60444$

$B = 0.75033$

$ab = 1.00000$

$N_1 = 1.65442$

$N_2 = 1.33274$

$R_1 = 0.90063$

$$\frac{N_2^2 \cdot (N_1^2+1)^2}{N_1^4 \cdot N_2^2+2 \cdot N_1^2 \cdot N_2^2+N_1^2+N_2^2} = 0.90063$$

$$\frac{(A^2+1)^2}{(A^4+A^2 \cdot B^2+2 \cdot A^2+1)} = 0.90063$$

$$R_1 - \frac{N_2^2 \cdot (N_1^2+1)^2}{N_1^4 \cdot N_2^2+2 \cdot N_1^2 \cdot N_2^2+N_1^2+N_2^2} = 0.00000$$

$$R_1 - \frac{(A^2+1)^2}{(A^4+A^2 \cdot B^2+2 \cdot A^2+1)} = 0.00000$$

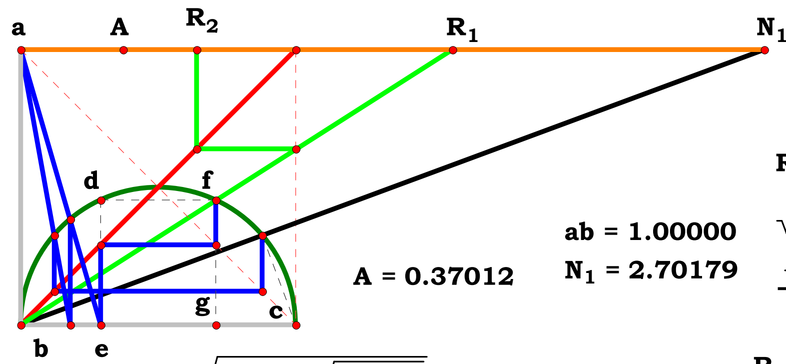
$$\frac{(A^2+1)^2}{(A^4+A^2 \cdot B^2+2 \cdot A^2+1)} - \frac{N_2^2 \cdot (N_1^2+1)^2}{N_1^4 \cdot N_2^2+2 \cdot N_1^2 \cdot N_2^2+N_1^2+N_2^2} = 0.00000$$

$R_2 = 1.11034$

$$\frac{(A^4+A^2 \cdot B^2+2 \cdot A^2+1)}{(A^2+1)^2} = 1.11034$$

$$R_2 - \frac{(A^4+A^2 \cdot B^2+2 \cdot A^2+1)}{(A^2+1)^2} = 0.00000$$

3OBT1R8



$A = 0.37012$

$ab = 1.00000$
$N_1 = 2.70179$

$R_1 = 1.56641$

$\sqrt{N_1^2 - N_1 - \sqrt{N_1^2 - N_1}} = 1.56641$

$\dfrac{\sqrt{1 - A - A \cdot \sqrt{1 - A}}}{A} = 1.56641$

$R_1 - \sqrt{N_1^2 - N_1 - \sqrt{N_1^2 - N_1}} = 0.00000$

$R_1 - \dfrac{\sqrt{1 - A - A \cdot \sqrt{1 - A}}}{A} = 0.00000$

$\dfrac{\sqrt{1 - A - A \cdot \sqrt{1 - A}}}{A} - \sqrt{N_1^2 - N_1 - \sqrt{N_1^2 - N_1}} = 0.00000$

$R_2 = 0.63840$

$\dfrac{A}{\sqrt{1 - A - A \cdot \sqrt{1 - A}}} = 0.63840$

$R_2 - \dfrac{A}{\sqrt{1 - A - A \cdot \sqrt{1 - A}}} = 0.00000$

Given.

Unit. $ab := 1$

$N_1 := 2.70179$

$A := \dfrac{1}{N_1}$

Descriptions.

$$be := \frac{1}{N_1^2 - \sqrt{N_1^2} - \sqrt{N_1^2 - \sqrt{N_1^2}} + 1} \qquad bg := 1 - be$$

$$de := \frac{\sqrt{N_1^2 - \sqrt{N_1^2} - \sqrt{N_1^2 - \sqrt{N_1^2}}}}{N_1^2 - \sqrt{N_1^2} - \sqrt{N_1^2 - \sqrt{N_1^2}} + 1} \qquad R_1 := \frac{bg}{de}$$

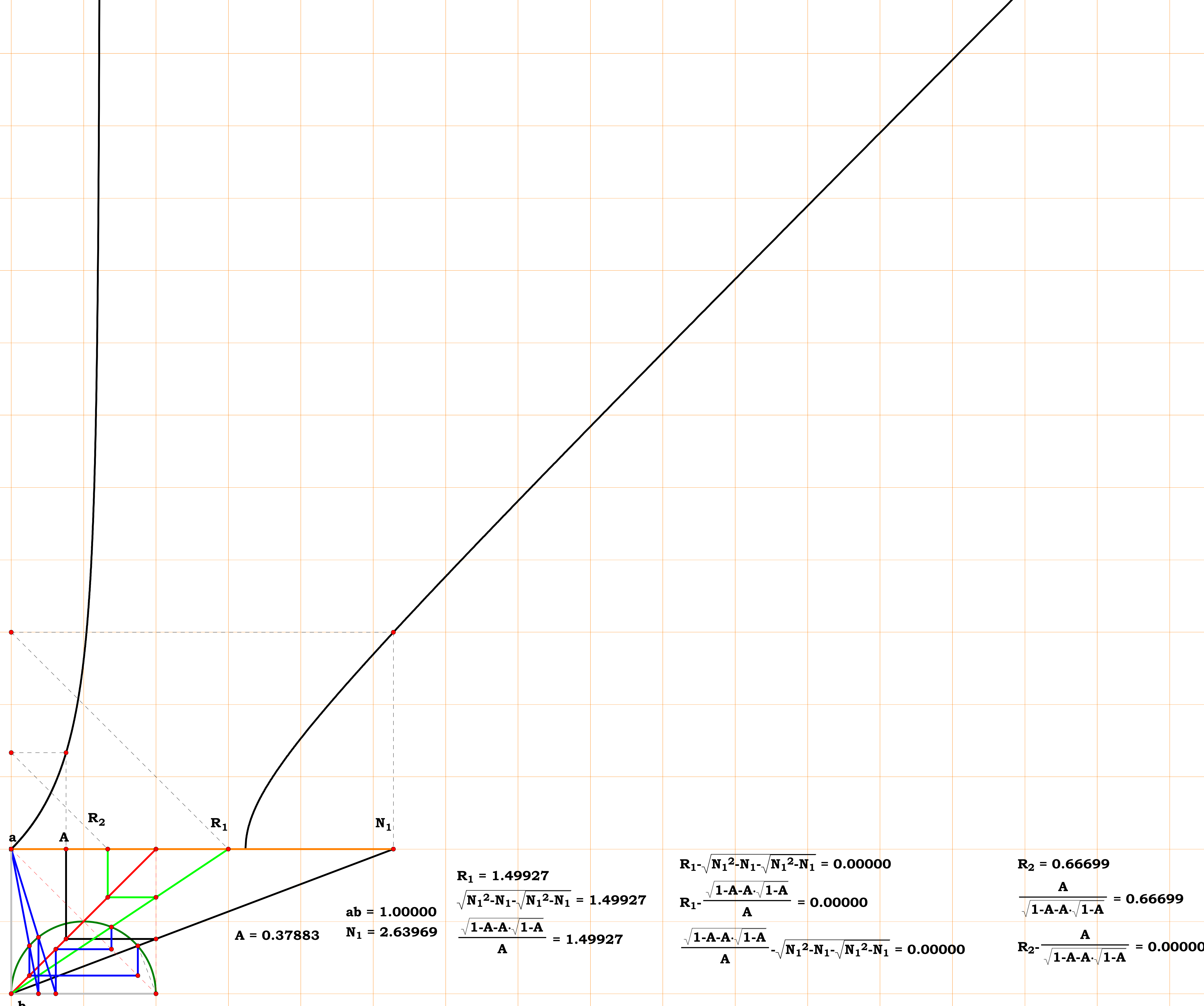
$$R_2 := \frac{1}{R_1} \qquad R_1 = 1.566401$$

Definitions.

$$R_1 - \sqrt{N_1^2 - N_1 - \sqrt{N_1^2 - N_1}} = 0$$

$$N_1 - \frac{1}{A} = 0$$

$$R_1 - \frac{\sqrt{1 - A - A \cdot \sqrt{1 - A}}}{A} = 0 \qquad R_2 - \frac{A}{\sqrt{1 - A - A \cdot \sqrt{1 - A}}} = 0$$


a
A
R_2
R_1
N_1
b
$A = 0.37883$
$ab = 1.00000$
$N_1 = 2.63969$
$R_1 = 1.49927$
$\sqrt{N_1^2 - N_1 - \sqrt{N_1^2 - N_1}} = 1.49927$
$\frac{\sqrt{1-A-A\cdot\sqrt{1-A}}}{A} = 1.49927$
$R_1 - \sqrt{N_1^2 - N_1 - \sqrt{N_1^2 - N_1}} = 0.00000$
$R_1 - \frac{\sqrt{1-A-A\cdot\sqrt{1-A}}}{A} = 0.00000$
$\frac{\sqrt{1-A-A\cdot\sqrt{1-A}}}{A} - \sqrt{N_1^2 - N_1 - \sqrt{N_1^2 - N_1}} = 0.00000$
$R_2 = 0.66699$
$\frac{A}{\sqrt{1-A-A\cdot\sqrt{1-A}}} = 0.66699$
$R_2 - \frac{A}{\sqrt{1-A-A\cdot\sqrt{1-A}}} = 0.00000$

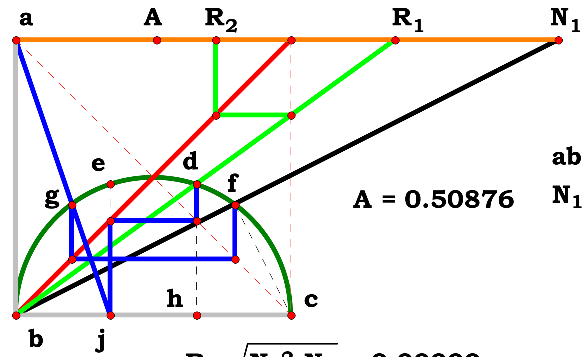
3OBT1R9

Given.

Unit. $ab := 1$

$N_1 := 1.96557$

$A := \dfrac{1}{N_1}$



$A = 0.50876$

$ab = 1.00000$

$N_1 = 1.96557$

$R_1 = 1.37765$

$\sqrt{N_1{}^2\text{-}N_1} = 1.37765$

$\dfrac{\sqrt{1\text{-}A}}{A} = 1.37765$

$R_1\text{-}\sqrt{N_1{}^2\text{-}N_1} = 0.00000$

$R_1\text{-}\dfrac{\sqrt{1\text{-}A}}{A} = 0.00000$

$\dfrac{\sqrt{1\text{-}A}}{A}\text{-}\sqrt{N_1{}^2\text{-}N_1} = 0.00000$

$R_2 = 0.72588$

$\dfrac{A}{\sqrt{1\text{-}A}} = 0.72588$

$R_2\text{-}\dfrac{A}{\sqrt{1\text{-}A}} = 0.00000$

Descriptions.

$bj := \dfrac{1}{N_1{}^2 - \sqrt{N_1{}^2} + 1}$ $\quad bh := 1 - bj$

$ej := \dfrac{\sqrt{N_1{}^2 - \sqrt{N_1{}^2}}}{N_1{}^2 - \sqrt{N_1{}^2} + 1}$ $\quad R_1 := \dfrac{bh}{ej}$

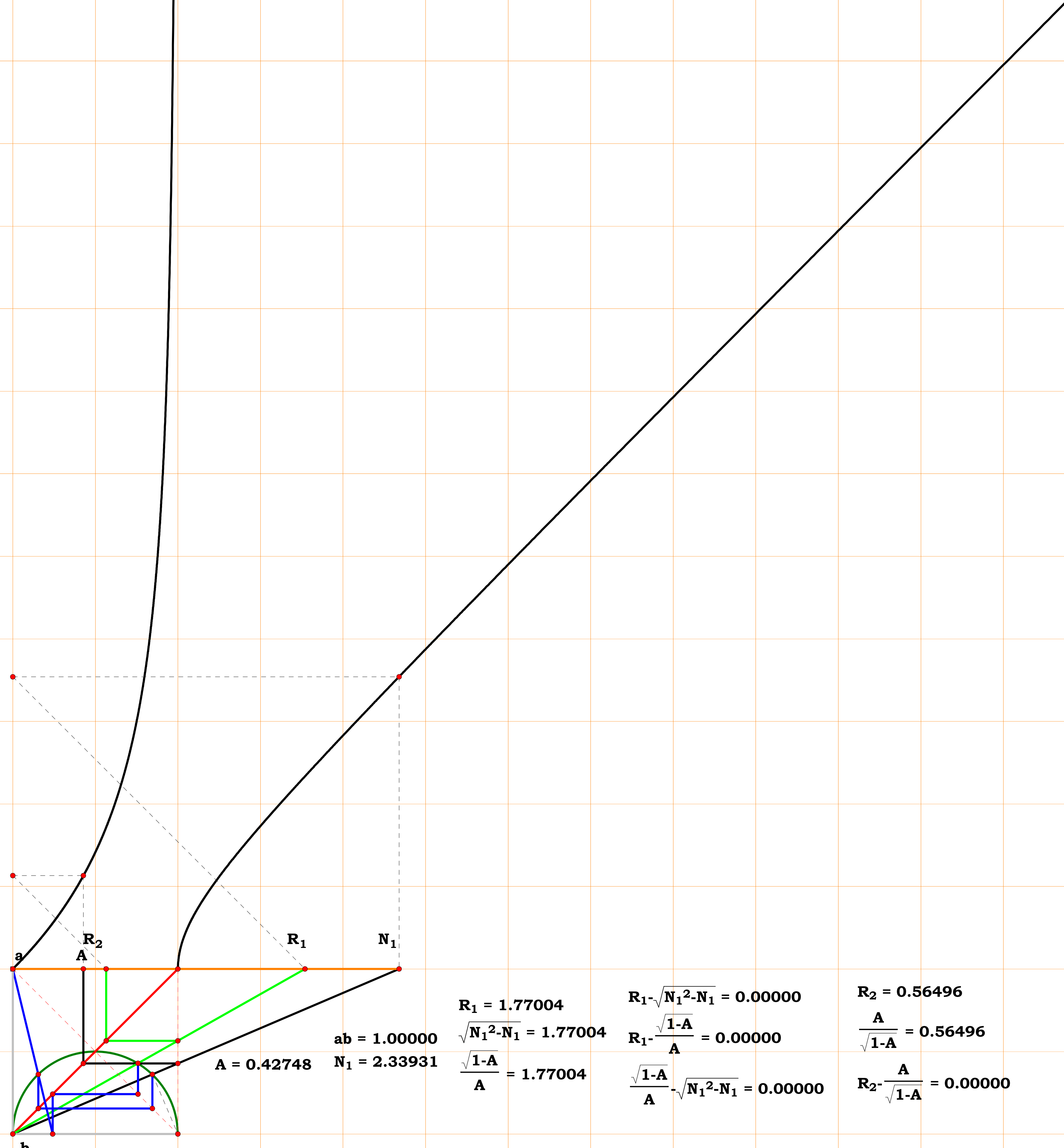
$R_2 := \dfrac{1}{R_1}$ $\quad R_1 = 1.377641$

Definitions.

$R_1 - \sqrt{N_1{}^2 - N_1} = 0$

$N_1 - \dfrac{1}{A} = 0$

$R_1 - \dfrac{\sqrt{(1-A)}}{A} = 0$ $\quad R_2 - \dfrac{A}{\sqrt{1-A}} = 0$



$ab = 1.00000$

$N_1 = 2.33931$

$A = 0.42748$

$R_1 = 1.77004$

$\sqrt{N_1{}^2 - N_1} = 1.77004$

$\frac{\sqrt{1-A}}{A} = 1.77004$

$R_1 - \sqrt{N_1{}^2 - N_1} = 0.00000$

$R_1 - \frac{\sqrt{1-A}}{A} = 0.00000$

$\frac{\sqrt{1-A}}{A} - \sqrt{N_1{}^2 - N_1} = 0.00000$

$R_2 = 0.56496$

$\frac{A}{\sqrt{1-A}} = 0.56496$

$R_2 - \frac{A}{\sqrt{1-A}} = 0.00000$

3OBT1R10

Given.

Unit. $ab := 1$

$N_1 := 1.33336 \quad N_2 := 1.74167$

$A := \dfrac{1}{N_1} \quad B := \dfrac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1 + N_1{}^2} \quad bc := \dfrac{N_1}{bN_1}$

$dN_2 := 1 - \dfrac{bc}{bN_1} \quad R_1 := \dfrac{N_2}{dN_2}$

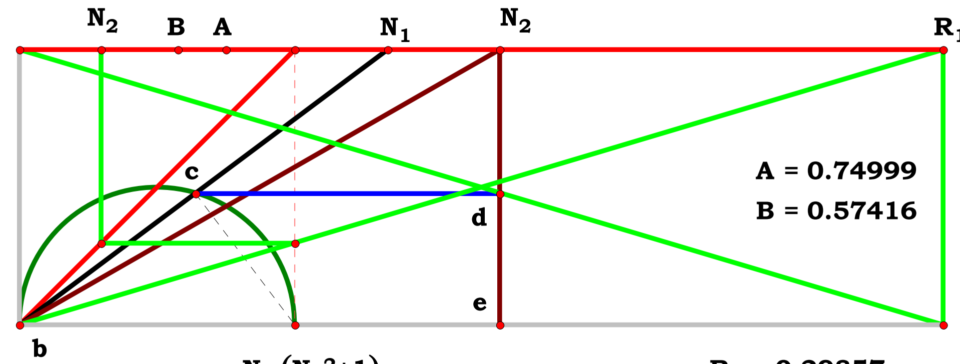
$R_2 := \dfrac{1}{R_1} \quad R_1 = 3.349348$

Definitions.

$$R_1 - \frac{N_2 \cdot \left(N_1{}^2 + 1\right)}{N_1{}^2 - N_1 + 1} = 0$$

$$N_1 - \frac{1}{A} = 0 \qquad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{\left(A^2 + 1\right)}{B \cdot \left(A^2 - A + 1\right)} = 0 \qquad R_2 - \frac{B \cdot \left(A^2 - A + 1\right)}{\left(A^2 + 1\right)} = 0$$



ab = 1.00000
N_1 = 1.33336
N_2 = 1.74167

R_1 = 3.34935

$\dfrac{N_2 \cdot (N_1{}^2+1)}{(N_1{}^2-N_1)+1} = 3.34935$

$\dfrac{A^2+1}{B \cdot ((A^2-A)+1)} = 3.34935$

$R_1 - \dfrac{N_2 \cdot (N_1{}^2+1)}{(N_1{}^2-N_1)+1} = 0.00000$

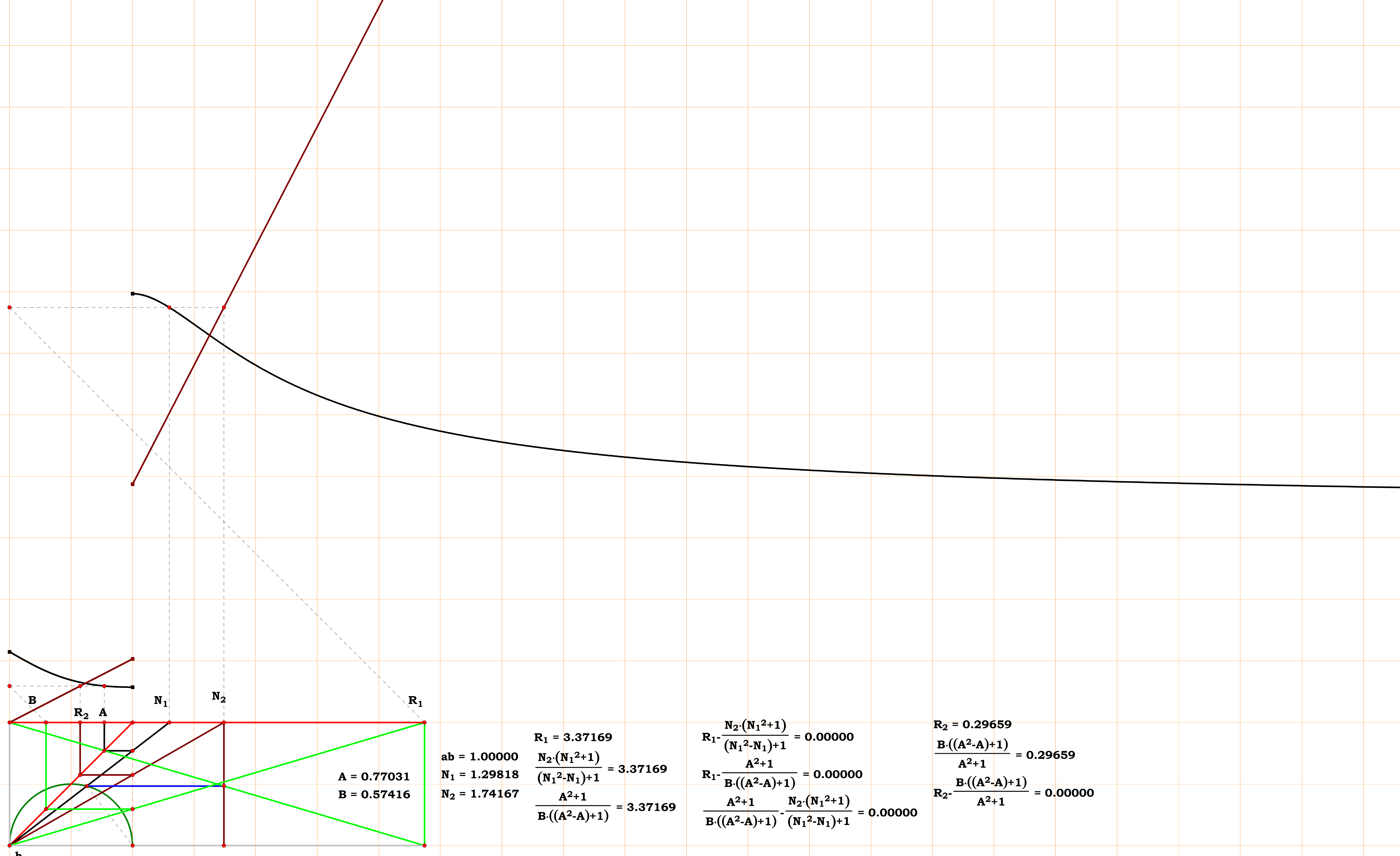
$R_1 - \dfrac{A^2+1}{B \cdot ((A^2-A)+1)} = 0.00000$

$\dfrac{A^2+1}{B \cdot ((A^2-A)+1)} - \dfrac{N_2 \cdot (N_1{}^2+1)}{(N_1{}^2-N_1)+1} = 0.00000$

R_2 = 0.29857

$\dfrac{B \cdot ((A^2-A)+1)}{A^2+1} = 0.29857$

$R_2 - \dfrac{B \cdot ((A^2-A)+1)}{A^2+1} = 0.00000$



$ab = 1.00000$

$N_1 = 1.29818$

$N_2 = 1.74167$

$R_1 = 3.37169$

$$\frac{N_2 \cdot (N_1{}^2+1)}{(N_1{}^2-N_1)+1} = 3.37169$$

$$\frac{A^2+1}{B \cdot ((A^2-A)+1)} = 3.37169$$

$$R_1 - \frac{N_2 \cdot (N_1{}^2+1)}{(N_1{}^2-N_1)+1} = 0.00000$$

$$R_1 - \frac{A^2+1}{B \cdot ((A^2-A)+1)} = 0.00000$$

$$\frac{A^2+1}{B \cdot ((A^2-A)+1)} - \frac{N_2 \cdot (N_1{}^2+1)}{(N_1{}^2-N_1)+1} = 0.00000$$

$R_2 = 0.29659$

$$\frac{B \cdot ((A^2-A)+1)}{A^2+1} = 0.29659$$

$$R_2 - \frac{B \cdot ((A^2-A)+1)}{A^2+1} = 0.00000$$

3OBT1R11

Given.

Unit. $ab := 1$

$N_1 := 2.47482 \quad N_2 := 1.42689$

$A := \dfrac{1}{N_1} \quad B := \dfrac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1 + {N_1}^2} \qquad bc := \dfrac{N_1}{bN_1}$

$de := \dfrac{bc}{bN_1} \qquad R_1 := \dfrac{N_2}{de}$

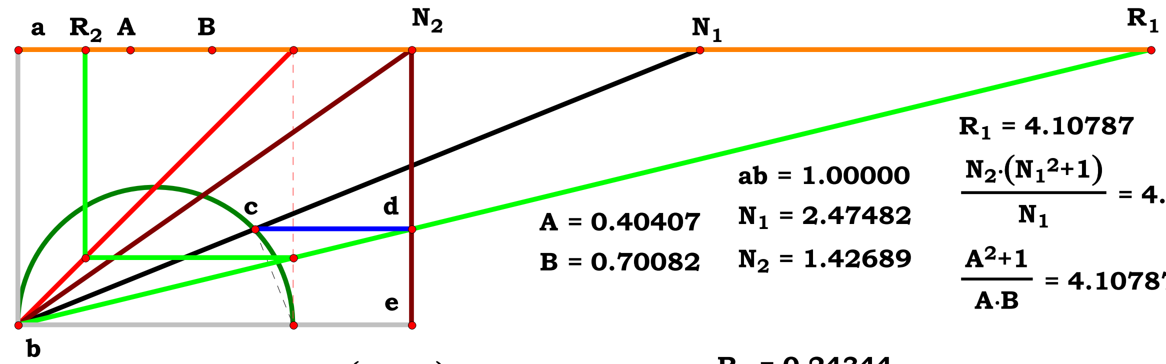
$R_2 := \dfrac{1}{R_1} \qquad R_1 = 4.107859$

Definitions.

$$R_1 - \frac{N_2 \cdot \left({N_1}^2 + 1\right)}{N_1} = 0$$

$$N_1 - \frac{1}{A} = 0 \qquad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{A^2 + 1}{A \cdot B} = 0 \qquad R_2 - \frac{A \cdot B}{A^2 + 1} = 0$$



$R_1 = 4.10787$

$ab = 1.00000$

$\dfrac{N_2 \cdot (N_1^2+1)}{N_1} = 4.10787$

$N_1 = 2.47482$

$A = 0.40407$

$B = 0.70082$

$N_2 = 1.42689$

$\dfrac{A^2+1}{A \cdot B} = 4.10787$

$R_2 = 0.24344$

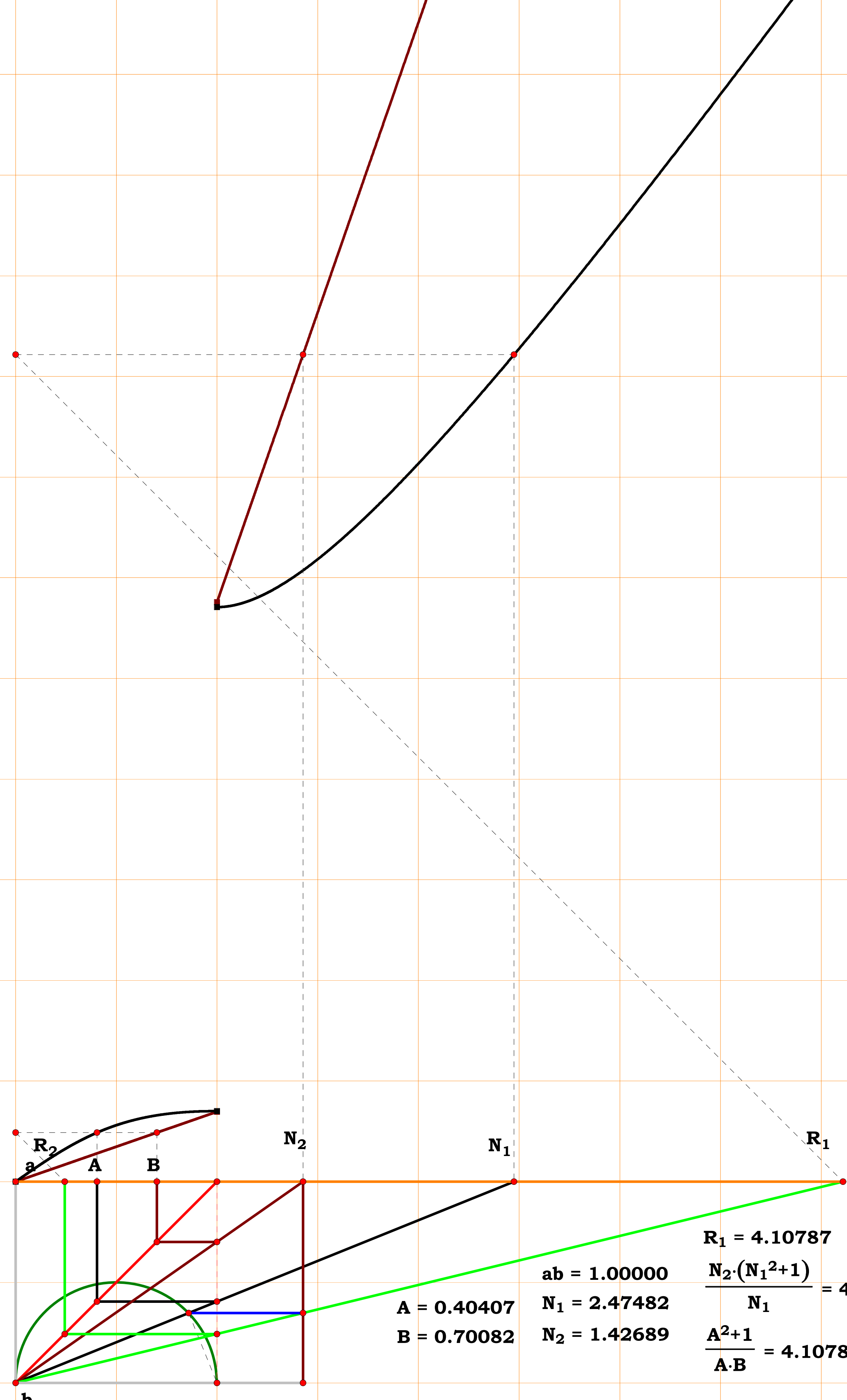
$R_1 - \dfrac{N_2 \cdot (N_1^2+1)}{N_1} = 0.00000$

$\dfrac{A \cdot B}{A^2+1} = 0.24344$

$R_1 - \dfrac{A^2+1}{A \cdot B} = 0.00000$

$R_2 - \dfrac{A \cdot B}{A^2+1} = 0.00000$

$\dfrac{A^2+1}{A \cdot B} - \dfrac{N_2 \cdot (N_1^2+1)}{N_1} = 0.00000$



$A = 0.40407$

$B = 0.70082$

$ab = 1.00000$

$N_1 = 2.47482$

$N_2 = 1.42689$

$R_1 = 4.10787$

$$\frac{N_2 \cdot (N_1{}^2+1)}{N_1} = 4.10787$$

$$\frac{A^2+1}{A \cdot B} = 4.10787$$

$$R_1 - \frac{N_2 \cdot (N_1{}^2+1)}{N_1} = 0.00000$$

$$R_1 - \frac{A^2+1}{A \cdot B} = 0.00000$$

$$\frac{A^2+1}{A \cdot B} - \frac{N_2 \cdot (N_1{}^2+1)}{N_1} = 0.00000$$

$R_2 = 0.24344$

$$\frac{A \cdot B}{A^2+1} = 0.24344$$

$$R_2 - \frac{A \cdot B}{A^2+1} = 0.00000$$

3OBT1R12

Given.

Unit. $ab := 1$

$N_1 := 2.09809 \quad N_2 := 1.79654$

$A := \dfrac{1}{N_1} \quad B := \dfrac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1+N_1^{\,2}} \qquad bd := \dfrac{N_1}{bN_1} \qquad bc := \dfrac{bd}{bN_1}$

$ce := N_2\cdot(1-bc) \qquad R_1 := \dfrac{ce}{bc}$

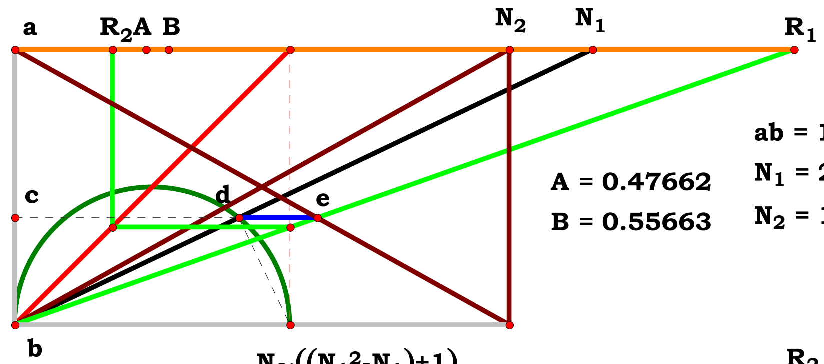
$R_2 := \dfrac{1}{R_1} \qquad R_1 = 2.829037$

Definitions.

$$R_1 - \frac{N_2\cdot\left(N_1^{\,2}-N_1+1\right)}{N_1} = 0$$

$$N_1 - \frac{1}{A} = 0 \qquad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{A^2-A+1}{A\cdot B} = 0 \qquad R_2 - \frac{A\cdot B}{A^2-A+1} = 0$$



$A = 0.47662$
$B = 0.55663$

$ab = 1.00000$
$N_1 = 2.09809$
$N_2 = 1.79654$

$R_1 = 2.82903$

$\dfrac{N_2\cdot((N_1^2-N_1)+1)}{N_1} = 2.82903$

$\dfrac{((A^2-A)+1)}{(A\cdot B)} = 2.82903$

$R_1 - \dfrac{N_2\cdot((N_1^2-N_1)+1)}{N_1} = 0.00000$

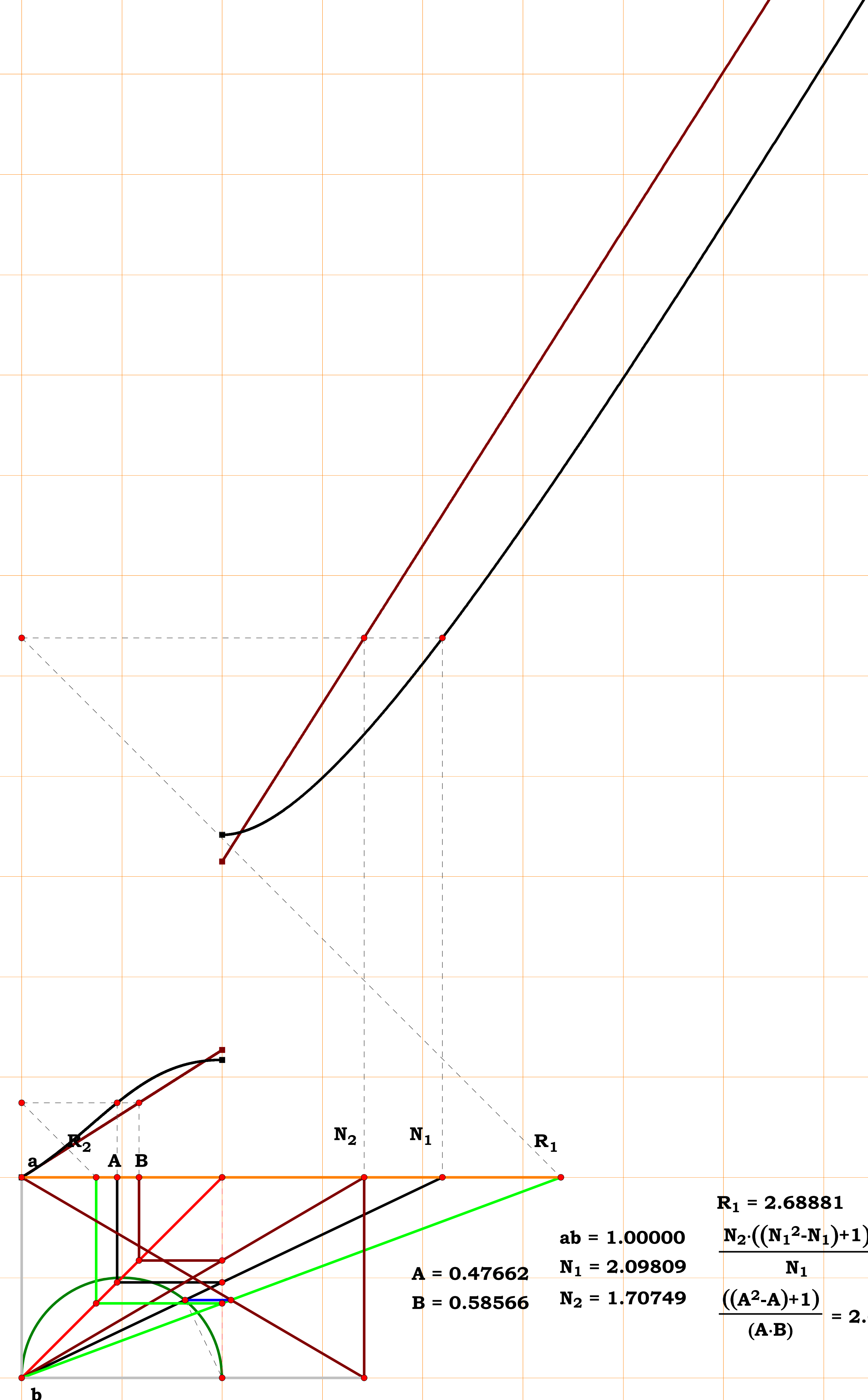
$R_1 - \dfrac{((A^2-A)+1)}{(A\cdot B)} = 0.00000$

$\dfrac{((A^2-A)+1)}{(A\cdot B)} - \dfrac{N_2\cdot((N_1^2-N_1)+1)}{N_1} = 0.00000$

$R_2 = 0.35348$

$\dfrac{(A\cdot B)}{((A^2-A)+1)} = 0.35348$

$R_2 - \dfrac{(A\cdot B)}{((A^2-A)+1)} = 0.00000$



$A = 0.47662$

$B = 0.58566$

$ab = 1.00000$

$N_1 = 2.09809$

$N_2 = 1.70749$

$R_1 = 2.68881$

$$\frac{N_2 \cdot ((N_1{}^2 - N_1) + 1)}{N_1} = 2.68881$$

$$\frac{((A^2 - A) + 1)}{(A \cdot B)} = 2.68881$$

$$R_1 - \frac{N_2 \cdot ((N_1{}^2 - N_1) + 1)}{N_1} = 0.00000$$

$$R_1 - \frac{((A^2 - A) + 1)}{(A \cdot B)} = 0.00000$$

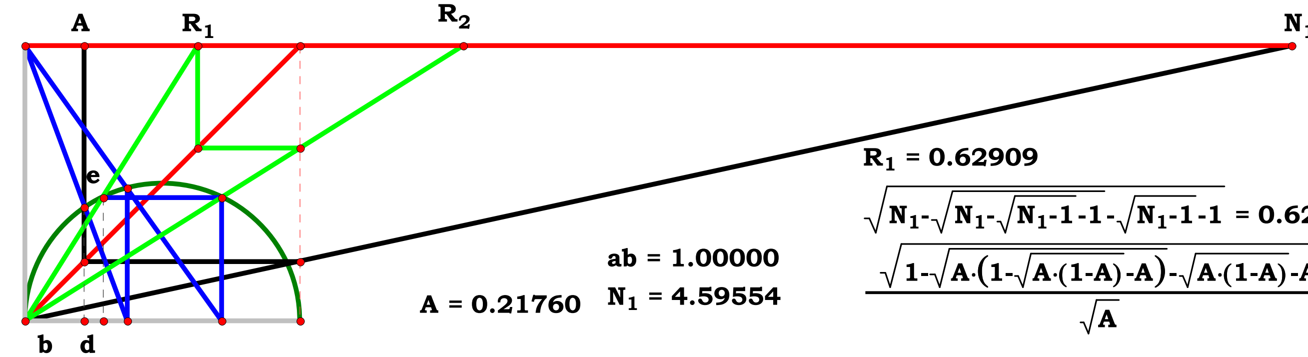
$$\frac{((A^2 - A) + 1)}{(A \cdot B)} - \frac{N_2 \cdot ((N_1{}^2 - N_1) + 1)}{N_1} = 0.00000$$

$R_2 = 0.37191$

$$\frac{(A \cdot B)}{((A^2 - A) + 1)} = 0.37191$$

$$R_2 - \frac{(A \cdot B)}{((A^2 - A) + 1)} = 0.00000$$

3OBT1R13



$R_1 = 0.62909$

$\sqrt{N_1-\sqrt{N_1-\sqrt{N_1-1}-1}-\sqrt{N_1-1}-1} = 0.62909$

$\frac{\sqrt{1-\sqrt{A\cdot(1-\sqrt{A\cdot(1-A)}-A)}-\sqrt{A\cdot(1-A)}-A}}{\sqrt{A}} = 0.62909$

$R_2 = 1.58959$

$\frac{\sqrt{A}}{\sqrt{1-\sqrt{A\cdot(1-\sqrt{A\cdot(1-A)}-A)}-\sqrt{A\cdot(1-A)}-A}} = 1.58959$

$R_1-\sqrt{N_1-\sqrt{N_1-\sqrt{N_1-1}-1}-\sqrt{N_1-1}-1} = 0.00000$

$R_1-\frac{\sqrt{1-\sqrt{A\cdot(1-\sqrt{A\cdot(1-A)}-A)}-\sqrt{A\cdot(1-A)}-A}}{\sqrt{A}} = 0.00000$

$R_2-\frac{\sqrt{A}}{\sqrt{1-\sqrt{A\cdot(1-\sqrt{A\cdot(1-A)}-A)}-\sqrt{A\cdot(1-A)}-A}} = 0.00000$

$\frac{\sqrt{1-\sqrt{A\cdot(1-\sqrt{A\cdot(1-A)}-A)}-\sqrt{A\cdot(1-A)}-A}}{\sqrt{A}}-\sqrt{N_1-\sqrt{N_1-\sqrt{N_1-1}-1}-\sqrt{N_1-1}-1} = 0.00000$

Given.

Unit. $ab := 1$

$N_1 := 4.59554$

$A := \frac{1}{N_1}$

Descriptions.

$bg := \frac{1}{N_1}$ $\quad fg := \sqrt{bg\cdot(1-bg)}$

$bj := \frac{bg}{1-fg}$ $\quad cj := 1-bj$

$hj := \sqrt{bj\cdot cj}$ $\quad bm := \frac{bj}{1-hj}$

$cm := 1-bm$ $\quad km := \sqrt{bm\cdot cm}$

$bd := cm$ $\quad de := km$ $\quad R_1 := \frac{bd}{de}$

$R_2 := \frac{1}{R_1}$ $\quad R_1 = 0.629093$

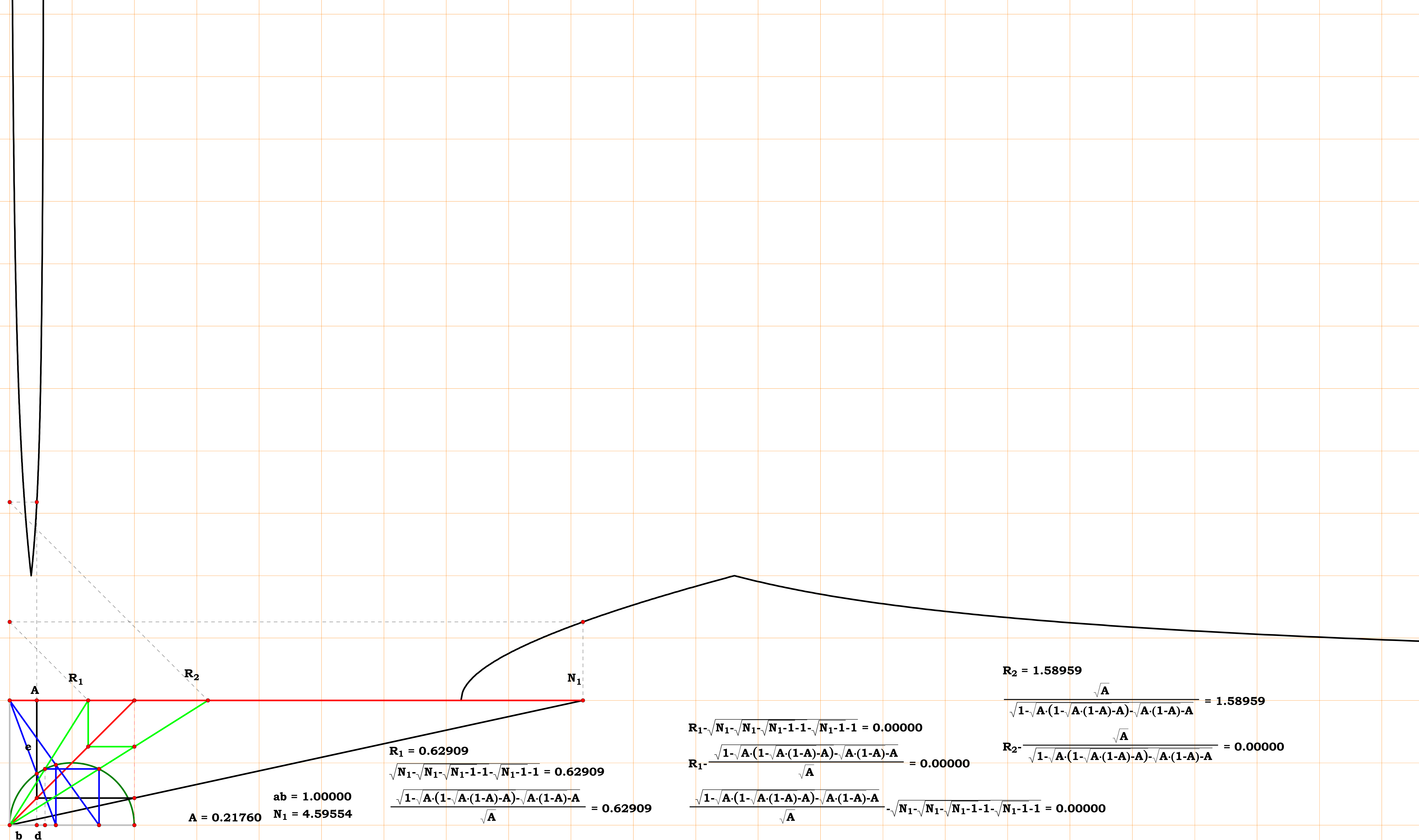
Definitions.

$$R_1-\sqrt{N_1-\sqrt{N_1-\sqrt{N_1-1}-1}-\sqrt{N_1-1}-1} = 0$$

$$N_1-\frac{1}{A} = 0$$

$$R_1-\frac{\sqrt{1-\sqrt{A\cdot\left[1-\sqrt{A\cdot(1-A)}-A\right]}-\sqrt{A\cdot(1-A)}-A}}{\sqrt{A}} = 0$$

$$R_2-\frac{\sqrt{A}}{\sqrt{1-\sqrt{A\cdot\left[1-\sqrt{A\cdot(1-A)}-A\right]}-\sqrt{A\cdot(1-A)}-A}} = 0$$



$A = 0.21760$

$ab = 1.00000$

$N_1 = 4.59554$

$R_1 = 0.62909$

$\sqrt{N_1-\sqrt{N_1-\sqrt{N_1-1}-1}-\sqrt{N_1-1}-1} = 0.62909$

$\dfrac{\sqrt{1-\sqrt{A\cdot\left(1-\sqrt{A\cdot(1-A)}-A\right)}-\sqrt{A\cdot(1-A)}-A}}{\sqrt{A}} = 0.62909$

$R_1-\sqrt{N_1-\sqrt{N_1-\sqrt{N_1-1}-1}-\sqrt{N_1-1}-1} = 0.00000$

$R_1-\dfrac{\sqrt{1-\sqrt{A\cdot\left(1-\sqrt{A\cdot(1-A)}-A\right)}-\sqrt{A\cdot(1-A)}-A}}{\sqrt{A}} = 0.00000$

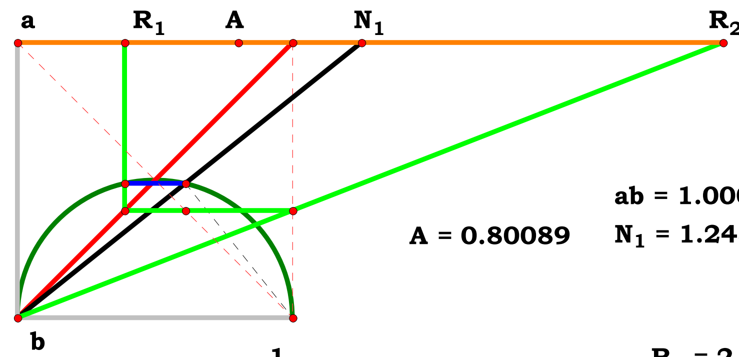
$\dfrac{\sqrt{1-\sqrt{A\cdot\left(1-\sqrt{A\cdot(1-A)}-A\right)}-\sqrt{A\cdot(1-A)}-A}}{\sqrt{A}}-\sqrt{N_1-\sqrt{N_1-\sqrt{N_1-1}-1}-\sqrt{N_1-1}-1} = 0.00000$

$R_2 = 1.58959$

$\dfrac{\sqrt{A}}{\sqrt{1-\sqrt{A\cdot\left(1-\sqrt{A\cdot(1-A)}-A\right)}-\sqrt{A\cdot(1-A)}-A}} = 1.58959$

$R_2-\dfrac{\sqrt{A}}{\sqrt{1-\sqrt{A\cdot\left(1-\sqrt{A\cdot(1-A)}-A\right)}-\sqrt{A\cdot(1-A)}-A}} = 0.00000$

3OBT1R14



$R_1 = 0.39077$

$\frac{1}{N_1^2+1} = 0.39077$

$\frac{A^2}{A^2+1} = 0.39077$

$ab = 1.00000$

$N_1 = 1.24861$

$A = 0.80089$

$R_1 - \frac{1}{N_1^2+1} = 0.00000$

$R_1 - \frac{A^2}{A^2+1} = 0.00000$

$\frac{A^2}{A^2+1} - \frac{1}{N_1^2+1} = 0.00000$

$R_2 = 2.55903$

$\frac{A^2+1}{A^2} = 2.55903$

$R_2 - \frac{A^2+1}{A^2} = 0.00000$

Given.

Unit. $ab := 1$

$N_1 := 1.24861$

$A := \frac{1}{N_1}$

Descriptions.

$cg := \frac{1}{N_1^{\,2} + 1}$ $\quad bf := cg$

$R_1 := bf \quad R_2 := \frac{1}{R_1}$

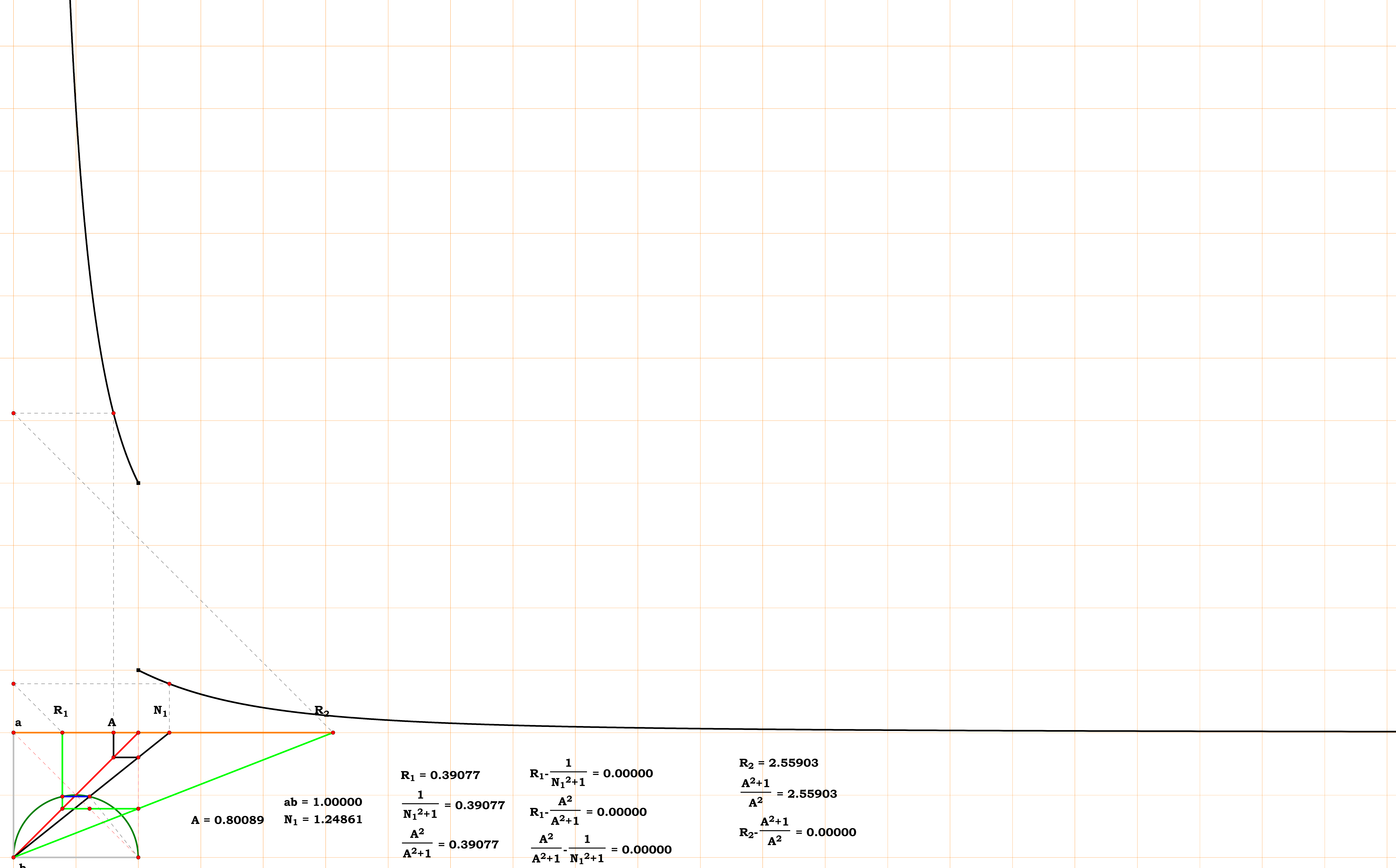
$R_1 = 0.390774$

Definitions.

$$R_1 - \frac{1}{N_1^{\,2} + 1} = 0$$

$$N_1 - \frac{1}{A} = 0$$

$$R_1 - \frac{A^2}{A^2 + 1} = 0 \qquad R_2 - \frac{A^2 + 1}{A^2} = 0$$



$A = 0.80089$

$ab = 1.00000$

$N_1 = 1.24861$

$R_1 = 0.39077$

$$\frac{1}{N_1^2+1} = 0.39077$$

$$\frac{A^2}{A^2+1} = 0.39077$$

$$R_1 - \frac{1}{N_1^2+1} = 0.00000$$

$$R_1 - \frac{A^2}{A^2+1} = 0.00000$$

$$\frac{A^2}{A^2+1} - \frac{1}{N_1^2+1} = 0.00000$$

$R_2 = 2.55903$

$$\frac{A^2+1}{A^2} = 2.55903$$

$$R_2 - \frac{A^2+1}{A^2} = 0.00000$$

3OBT1R15

Given.

Unit. $ab := 1$

$N_1 := 1.35556$

$A := \dfrac{1}{N_1}$

Descriptions.

$bg := \dfrac{1}{N_1}$ $\quad cg := 1 - bg$

$eg := \sqrt{bg \cdot cg}$ $\quad bf := cg$

$df := eg$ $\quad R_1 := \dfrac{bf}{df}$

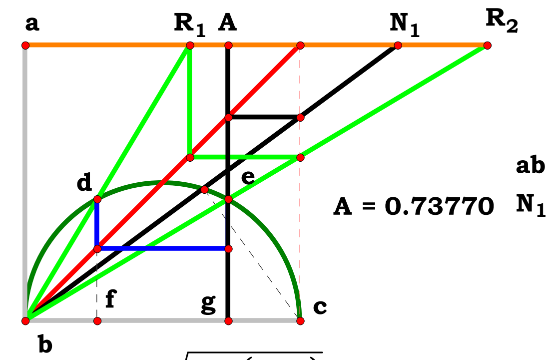
$R_2 := \dfrac{1}{R_1}$ $\quad R_1 = 0.596289$

Definitions.

$$R_1 - \frac{\sqrt{N_1 - 1} \cdot \sqrt{N_1^{\,2}}}{N_1} = 0$$

$$N_1 - \frac{1}{A} = 0$$

$$R_1 - \frac{1 - A}{\sqrt{A - A^2}} = 0 \qquad R_2 - \frac{\sqrt{A - A^2}}{1 - A} = 0$$



$A = 0.73770$

$ab = 1.00000$

$N_1 = 1.35556$

$R_1 = 0.59629$

$\dfrac{\sqrt{N_1^2 \cdot (N_1 - 1)}}{N_1} = 0.59629$

$\dfrac{1 - A}{\sqrt{A - A^2}} = 0.59629$

$R_1 - \dfrac{\sqrt{N_1^2 \cdot (N_1 - 1)}}{N_1} = 0.00000$

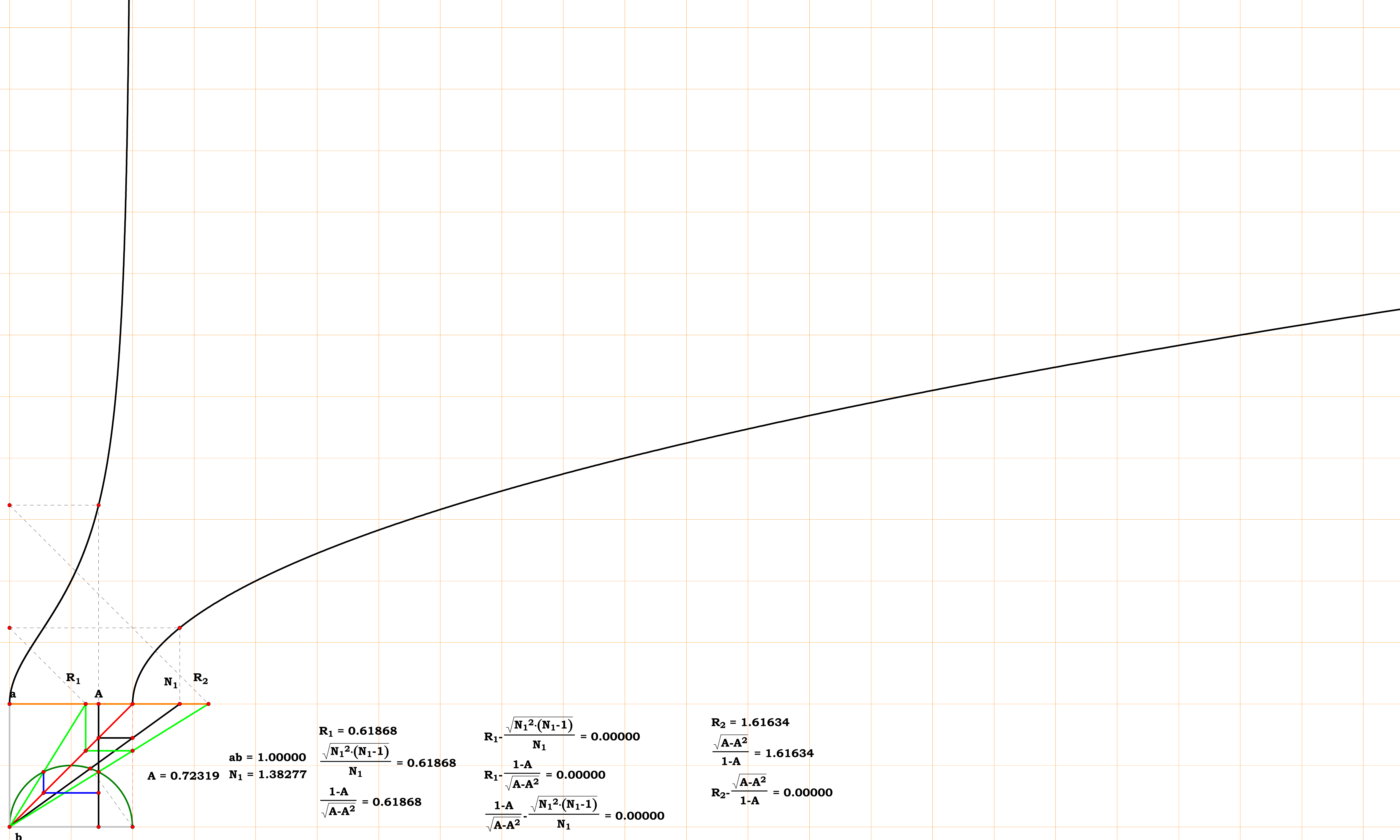
$R_1 - \dfrac{1 - A}{\sqrt{A - A^2}} = 0.00000$

$\dfrac{1 - A}{\sqrt{A - A^2}} - \dfrac{\sqrt{N_1^2 \cdot (N_1 - 1)}}{N_1} = 0.00000$

$R_2 = 1.67704$

$\dfrac{\sqrt{A - A^2}}{1 - A} = 1.67704$

$R_2 - \dfrac{\sqrt{A - A^2}}{1 - A} = 0.00000$



$A = 0.72319$

$ab = 1.00000$

$N_1 = 1.38277$

$R_1 = 0.61868$

$\frac{\sqrt{N_1^2 \cdot (N_1 - 1)}}{N_1} = 0.61868$

$\frac{1-A}{\sqrt{A-A^2}} = 0.61868$

$R_1 - \frac{\sqrt{N_1^2 \cdot (N_1 - 1)}}{N_1} = 0.00000$

$R_1 - \frac{1-A}{\sqrt{A-A^2}} = 0.00000$

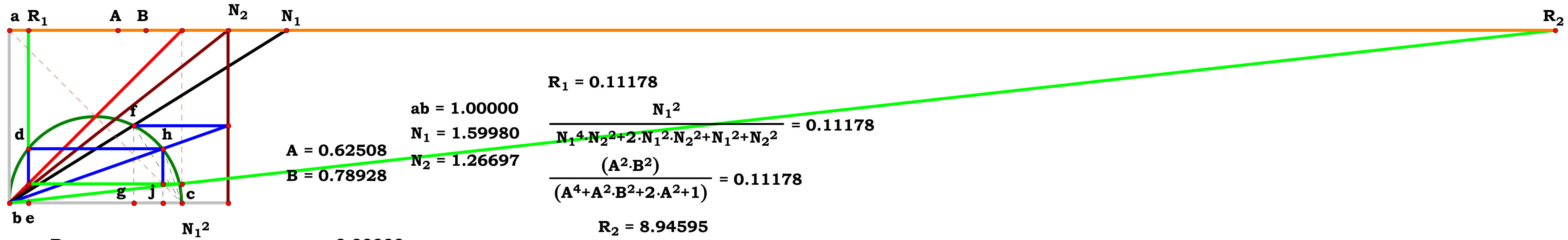
$\frac{1-A}{\sqrt{A-A^2}} - \frac{\sqrt{N_1^2 \cdot (N_1 - 1)}}{N_1} = 0.00000$

$R_2 = 1.61634$

$\frac{\sqrt{A-A^2}}{1-A} = 1.61634$

$R_2 - \frac{\sqrt{A-A^2}}{1-A} = 0.00000$

3OBT02R0



$A = 0.62508$

$B = 0.78928$

$ab = 1.00000$

$N_1 = 1.59980$

$N_2 = 1.26697$

$R_1 = 0.11178$

$$\frac{N_1^2}{N_1^4 \cdot N_2^2 + 2 \cdot N_1^2 \cdot N_2^2 + N_1^2 + N_2^2} = 0.11178$$

$$\frac{(A^2 \cdot B^2)}{(A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1)} = 0.11178$$

$R_2 = 8.94595$

$$\frac{(A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1)}{(A^2 \cdot B^2)} = 8.94595$$

$$R_2 - \frac{(A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1)}{(A^2 \cdot B^2)} = 0.00000$$

$$R_1 - \frac{N_1^2}{N_1^4 \cdot N_2^2 + 2 \cdot N_1^2 \cdot N_2^2 + N_1^2 + N_2^2} = 0.00000$$

$$R_1 - \frac{(A^2 \cdot B^2)}{(A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1)} = 0.00000$$

$$\frac{(A^2 \cdot B^2)}{(A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1)} - \frac{N_1^2}{N_1^4 \cdot N_2^2 + 2 \cdot N_1^2 \cdot N_2^2 + N_1^2 + N_2^2} = 0.00000$$

Given.

Unit. $ab := 1$

$N_1 := 1.59980 \quad N_2 := 1.26697$

$A := \frac{1}{N_1} \quad B := \frac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1 + N_1^2} \quad bf := \frac{N_1}{bN_1} \quad fg := \frac{bf}{bN_1}$

$bk := \sqrt{fg^2 + N_2^2} \quad bh := \frac{N_2}{bk} \quad bj := \frac{N_2 \cdot bh}{bk}$

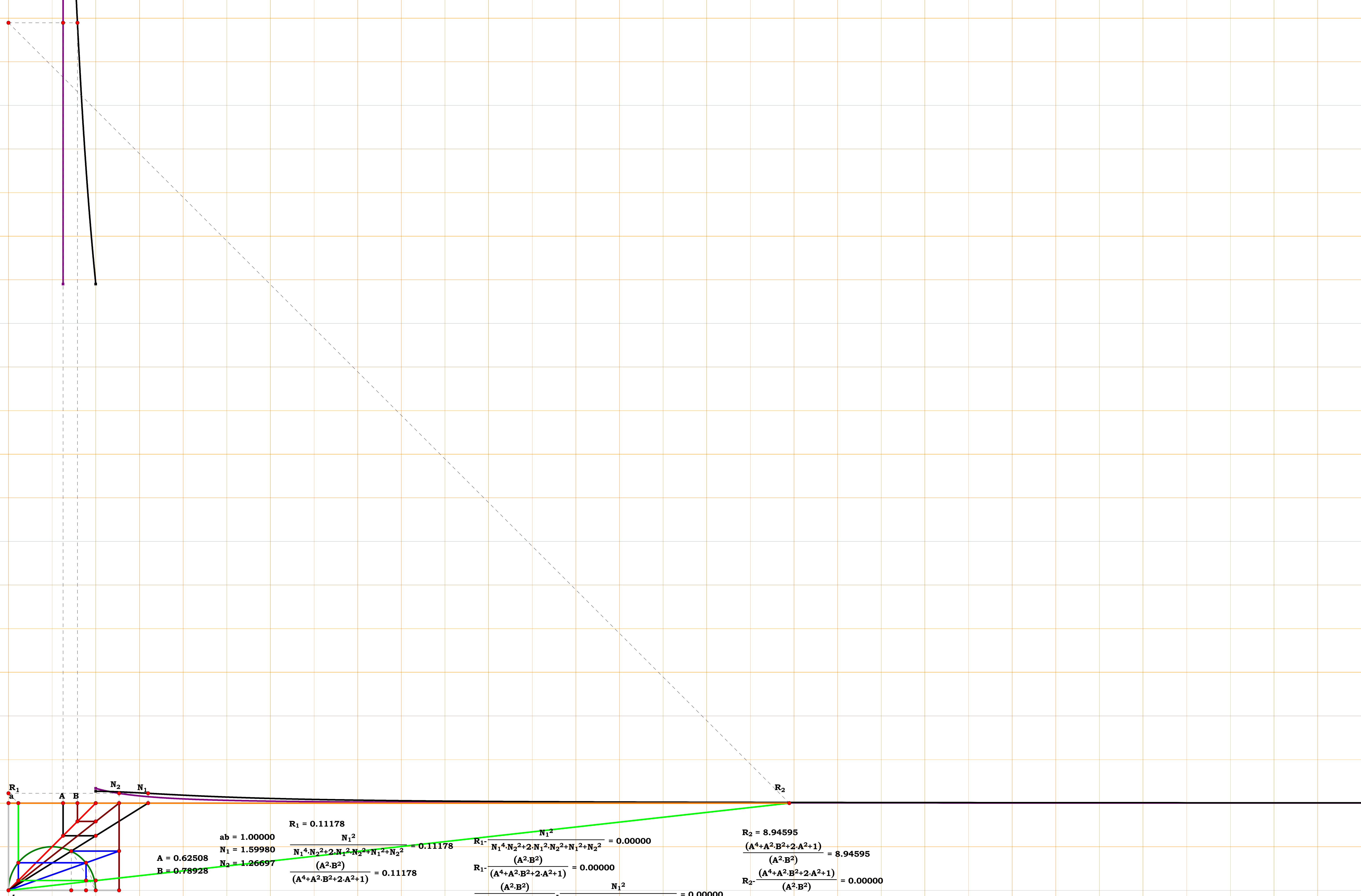
$R_1 := 1 - bj \quad R_2 := \frac{1}{R_1} \quad R_1 = 0.111783$

Definitions.

$$R_1 - \frac{N_1^2}{N_1^4 \cdot N_2^2 + 2 \cdot N_1^2 \cdot N_2^2 + N_1^2 + N_2^2} = 0$$

$N_1 - \frac{1}{A} = 0 \quad N_2 - \frac{1}{B} = 0$

$R_1 - \frac{A^2 \cdot B^2}{A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1} = 0 \quad R_2 - \frac{A^4 + A^2 \cdot B^2 + \left(2 \cdot A^2 + 1\right)}{A^2 \cdot B^2} = 0$



A = 0.62508

B = 0.78928

ab = 1.00000

N_1 = 1.59980

N_2 = 1.26697

R_1 = 0.11178

$$\frac{N_1^2}{N_1^4 \cdot N_2^2 + 2 \cdot N_1^2 \cdot N_2^2 + N_1^2 + N_2^2} = 0.11178$$

$$\frac{(A^2 \cdot B^2)}{(A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1)} = 0.11178$$

$$R_1 - \frac{N_1^2}{N_1^4 \cdot N_2^2 + 2 \cdot N_1^2 \cdot N_2^2 + N_1^2 + N_2^2} = 0.00000$$

$$R_1 - \frac{(A^2 \cdot B^2)}{(A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1)} = 0.00000$$

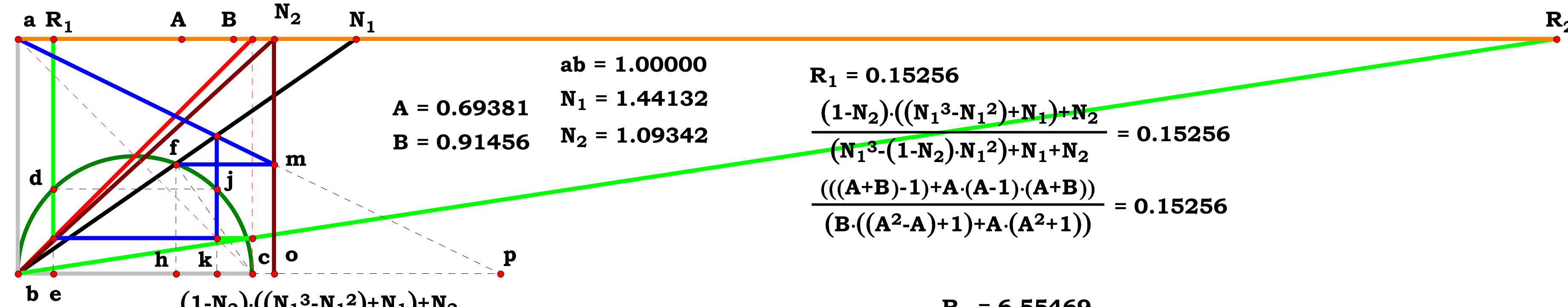
$$\frac{(A^2 \cdot B^2)}{(A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1)} - \frac{N_1^2}{N_1^4 \cdot N_2^2 + 2 \cdot N_1^2 \cdot N_2^2 + N_1^2 + N_2^2} = 0.00000$$

R_2 = 8.94595

$$\frac{(A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1)}{(A^2 \cdot B^2)} = 8.94595$$

$$R_2 - \frac{(A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1)}{(A^2 \cdot B^2)} = 0.00000$$

3OBT2R1



$A = 0.69381$

$B = 0.91456$

$ab = 1.00000$

$N_1 = 1.44132$

$N_2 = 1.09342$

$R_1 = 0.15256$

$$\frac{(1-N_2)\cdot((N_1{}^3-N_1{}^2)+N_1)+N_2}{(N_1{}^3-(1-N_2)\cdot N_1{}^2)+N_1+N_2} = 0.15256$$

$$\frac{(((A+B)-1)+A\cdot(A-1)\cdot(A+B))}{(B\cdot((A^2-A)+1)+A\cdot(A^2+1))} = 0.15256$$

$$R_1 - \frac{(1-N_2)\cdot((N_1{}^3-N_1{}^2)+N_1)+N_2}{(N_1{}^3-(1-N_2)\cdot N_1{}^2)+N_1+N_2} = 0.00000$$

$$R_1 - \frac{(((A+B)-1)+A\cdot(A-1)\cdot(A+B))}{(B\cdot((A^2-A)+1)+A\cdot(A^2+1))} = 0.00000$$

$$\frac{(((A+B)-1)+A\cdot(A-1)\cdot(A+B))}{(B\cdot((A^2-A)+1)+A\cdot(A^2+1))} - \frac{(1-N_2)\cdot((N_1{}^3-N_1{}^2)+N_1)+N_2}{(N_1{}^3-(1-N_2)\cdot N_1{}^2)+N_1+N_2} = 0.00000$$

$R_2 = 6.55469$

$$\frac{(B\cdot((A^2-A)+1)+A\cdot(A^2+1))}{(((A+B)-1)+A\cdot(A-1)\cdot(A+B))} = 6.55469$$

$$R_2 - \frac{(B\cdot((A^2-A)+1)+A\cdot(A^2+1))}{(((A+B)-1)+A\cdot(A-1)\cdot(A+B))} = 0.00000$$

Given.

Unit. $ab := 1$

$N_1 := 1.44132 \quad N_2 := 1.09342$

$$A := \frac{1}{N_1} \quad B := \frac{1}{N_2}$$

Descriptions.

$$bN_1 := \sqrt{N_1{}^2 + 1} \quad bf := \frac{N_1}{bN_1} \quad fh := \frac{bf}{bN_1}$$

$$bp := \frac{N_2}{1 - fh} \quad bk := \frac{N_1 \cdot bp}{N_1 + bp}$$

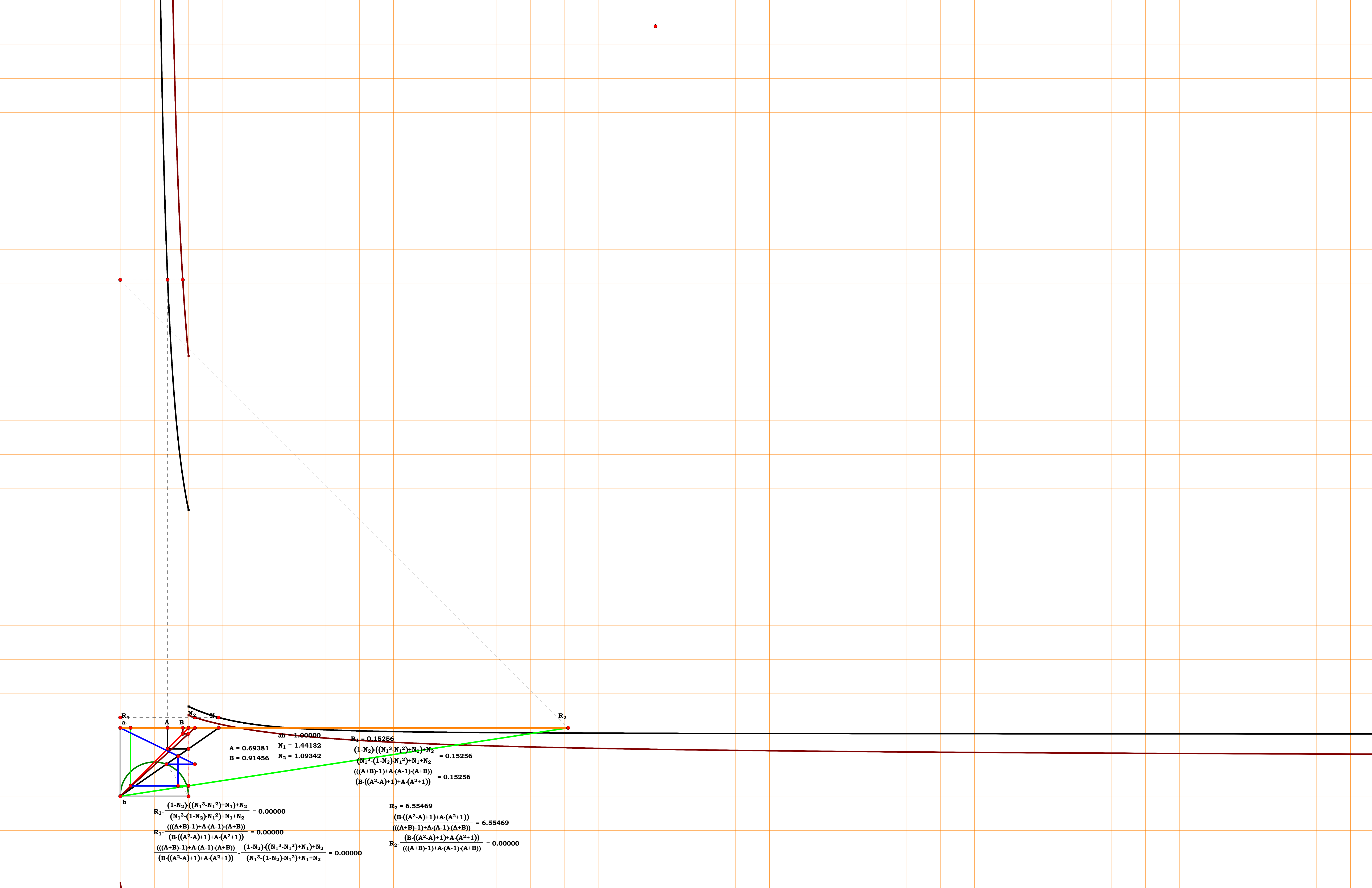
$$R_1 := (1 - bk) \quad R_2 := \frac{1}{R_1} \quad R_1 = 0.152564$$

Definitions.

$$R_1 - \frac{(1 - N_2)\cdot\left(N_1{}^3 - N_1{}^2 + N_1\right) + N_2}{N_1{}^3 - (1 - N_2)\cdot N_1{}^2 + N_1 + N_2} = 0$$

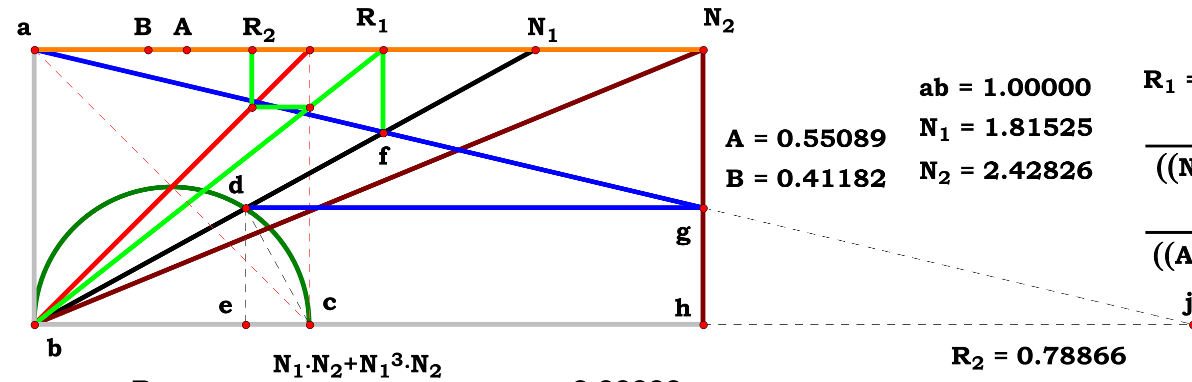
$$N_1 - \frac{1}{A} = 0 \qquad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{(A + B) - 1 + A\cdot(A - 1)\cdot(A + B)}{B\cdot\left(A^2 - A + 1\right) + A\cdot\left(A^2 + 1\right)} = 0 \qquad R_2 - \frac{B\cdot\left(A^2 - A + 1\right) + A\cdot\left(A^2 + 1\right)}{(A + B) - 1 + A\cdot(A - 1)\cdot(A + B)} = 0$$



R_1
a
A
B
N_2
N_1
R_2
b
ab = 1.00000
N_1 = 1.44132
N_2 = 1.09342
A = 0.69381
B = 0.91456
R_1 = 0.15256
$\frac{(1-N_2)\cdot((N_1^3-N_1^2)+N_1)+N_2}{(N_1^3-(1-N_2)\cdot N_1^2)+N_1+N_2} = 0.15256$
$\frac{(((A+B)-1)+A\cdot(A-1)\cdot(A+B))}{(B\cdot((A^2-A)+1)+A\cdot(A^2+1))} = 0.15256$
$R_1-\frac{(1-N_2)\cdot((N_1^3-N_1^2)+N_1)+N_2}{(N_1^3-(1-N_2)\cdot N_1^2)+N_1+N_2} = 0.00000$
$R_1-\frac{(((A+B)-1)+A\cdot(A-1)\cdot(A+B))}{(B\cdot((A^2-A)+1)+A\cdot(A^2+1))} = 0.00000$
$\frac{(((A+B)-1)+A\cdot(A-1)\cdot(A+B))}{(B\cdot((A^2-A)+1)+A\cdot(A^2+1))}-\frac{(1-N_2)\cdot((N_1^3-N_1^2)+N_1)+N_2}{(N_1^3-(1-N_2)\cdot N_1^2)+N_1+N_2} = 0.00000$
R_2 = 6.55469
$\frac{(B\cdot((A^2-A)+1)+A\cdot(A^2+1))}{(((A+B)-1)+A\cdot(A-1)\cdot(A+B))} = 6.55469$
$R_2-\frac{(B\cdot((A^2-A)+1)+A\cdot(A^2+1))}{(((A+B)-1)+A\cdot(A-1)\cdot(A+B))} = 0.00000$

3OBT02R2



A = 0.55089
B = 0.41182

ab = 1.00000
N_1 = 1.81525
N_2 = 2.42826

R_1 = 1.26797

$$\frac{N_1 \cdot N_2 + N_1{}^3 \cdot N_2}{((N_1 + N_1{}^3) - N_1{}^2) + N_2 + N_1{}^2 \cdot N_2} = 1.26797$$

$$\frac{(A^2+1)}{((A^2+1)\cdot(A+B) - A\cdot B)} = 1.26797$$

$$R_1 - \frac{N_1 \cdot N_2 + N_1{}^3 \cdot N_2}{((N_1 + N_1{}^3) - N_1{}^2) + N_2 + N_1{}^2 \cdot N_2} = 0.00000$$

$$R_1 - \frac{(A^2+1)}{((A^2+1)\cdot(A+B) - A\cdot B)} = 0.00000$$

$$\frac{(A^2+1)}{((A^2+1)\cdot(A+B) - A\cdot B)} - \frac{N_1 \cdot N_2 + N_1{}^3 \cdot N_2}{((N_1 + N_1{}^3) - N_1{}^2) + N_2 + N_1{}^2 \cdot N_2} = 0.00000$$

R_2 = 0.78866

$$\frac{((A^2+1)\cdot(A+B) - A\cdot B)}{(A^2+1)} = 0.78866$$

$$R_2 - \frac{((A^2+1)\cdot(A+B) - A\cdot B)}{(A^2+1)} = 0.00000$$

Given.

Unit. $ab := 1$

$N_1 := 1.81525 \quad N_2 := 2.42826$

$$A := \frac{1}{N_1} \quad B := \frac{1}{N_2}$$

Descriptions.

$$bN_1 := \sqrt{1 + N_1{}^2} \quad bd := \frac{N_1}{bN_1} \quad de := \frac{bd}{bN_1}$$

$$bj := \frac{N_2}{1 - de} \quad R_1 := \frac{N_1 \cdot bj}{N_1 + bj}$$

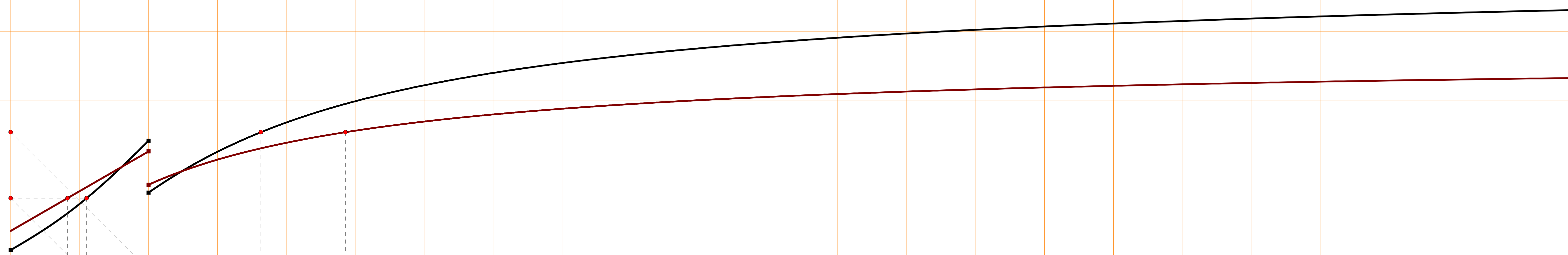
$$R_2 := \frac{1}{R_1} \quad R_1 = 1.267974$$

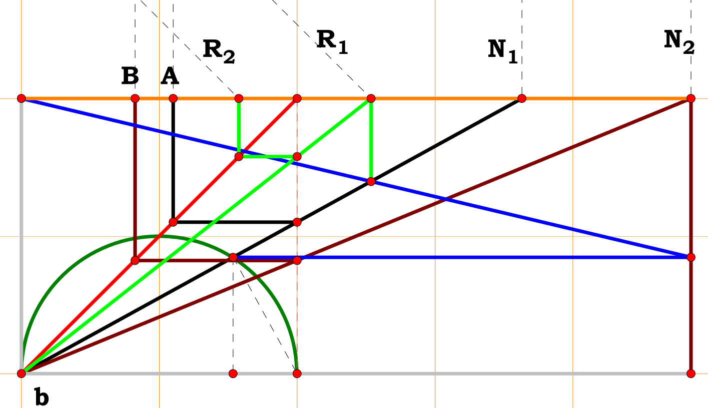
Definitions.

$$R_1 - \frac{N_1 \cdot N_2 + N_1{}^3 \cdot N_2}{N_1 + N_1{}^3 - N_1{}^2 + N_2 + N_1{}^2 \cdot N_2} = 0$$

$$N_1 - \frac{1}{A} = 0 \quad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{\left(A^2 + 1\right)}{\left(A^2 + 1\right)\cdot(A + B) - A\cdot B} = 0 \quad R_2 - \frac{\left(A^2 + 1\right)\cdot(A + B) - A\cdot B}{\left(A^2 + 1\right)} = 0$$





$A = 0.55089$

$B = 0.41182$

$ab = 1.00000$

$N_1 = 1.81525$

$N_2 = 2.42826$

$R_1 = 1.26797$

$$\frac{N_1 \cdot N_2 + N_1{}^3 \cdot N_2}{((N_1 + N_1{}^3) - N_1{}^2) + N_2 + N_1{}^2 \cdot N_2} = 1.26797$$

$$\frac{(A^2+1)}{((A^2+1) \cdot (A+B) - A \cdot B)} = 1.26797$$

$$R_1 - \frac{N_1 \cdot N_2 + N_1{}^3 \cdot N_2}{((N_1 + N_1{}^3) - N_1{}^2) + N_2 + N_1{}^2 \cdot N_2} = 0.00000$$

$$R_1 - \frac{(A^2+1)}{((A^2+1) \cdot (A+B) - A \cdot B)} = 0.00000$$

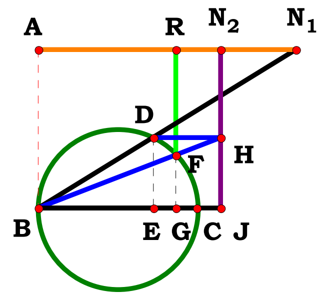
$$\frac{(A^2+1)}{((A^2+1) \cdot (A+B) - A \cdot B)} - \frac{N_1 \cdot N_2 + N_1{}^3 \cdot N_2}{((N_1 + N_1{}^3) - N_1{}^2) + N_2 + N_1{}^2 \cdot N_2} = 0.00000$$

$R_2 = 0.78866$

$$\frac{((A^2+1) \cdot (A+B) - A \cdot B)}{(A^2+1)} = 0.78866$$

$$R_2 - \frac{((A^2+1) \cdot (A+B) - A \cdot B)}{(A^2+1)} = 0.00000$$

3OBT2R3



$N_1 = 1.62626$
$N_2 = 1.15152$
$R = 0.86946$

Unit. $AB := 1$ **Given.** $N_1 := 1.62626$ $N_2 := 1.15152$

$N_u := 3$ $A := \dfrac{N_u}{N_1}$ $B := \dfrac{N_u}{N_2}$ $Y := 20$ $Z := 19$ $p := \dfrac{Y}{N_1}$ $q := \dfrac{Z}{N_2}$

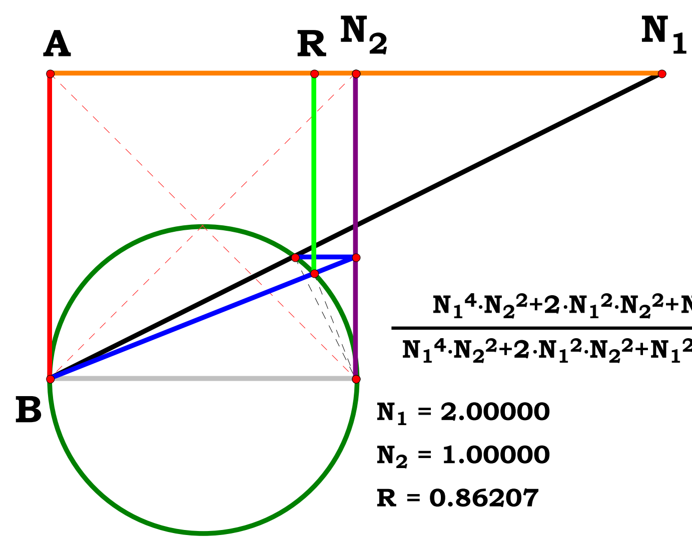
Descriptions.

$BN_1 := \sqrt{AB^2 + N_1^2}$ $BD := \dfrac{N_1 \cdot AB}{BN_1}$

$DE := \dfrac{AB \cdot BD}{BN_1}$ $BH := \sqrt{N_2^2 + DE^2}$

$BF := \dfrac{N_2 \cdot AB}{BH}$ $R := \dfrac{N_2 \cdot BF}{BH}$

$R = 0.869456$



$$\frac{N_1^4 \cdot N_2^2 + 2 \cdot N_1^2 \cdot N_2^2 + N_2^2}{N_1^4 \cdot N_2^2 + 2 \cdot N_1^2 \cdot N_2^2 + N_1^2 + N_2^2} - R = 0.00000$$

$N_1 = 2.00000$
$N_2 = 1.00000$
$R = 0.86207$

Definitions.

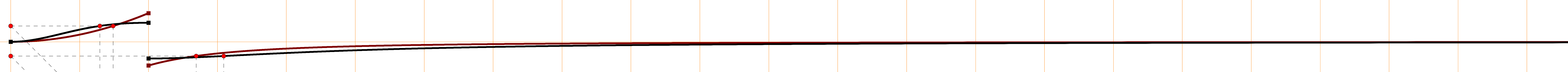
$$R - \frac{N_2^2 \cdot \left(N_1^2 + 1\right)^2}{N_1^4 \cdot N_2^2 + 2 \cdot N_1^2 \cdot N_2^2 + N_1^2 + N_2^2} = 0$$

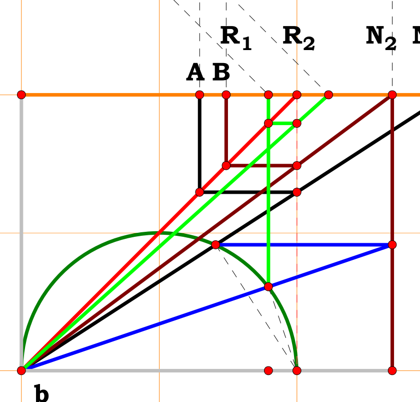
$$N_1 - \frac{N_u}{A} = 0 \qquad N_2 - \frac{N_u}{B} = 0$$

$$R - \frac{\left(A^2 + N_u^2\right)^2}{A^4 + A^2 \cdot B^2 + 2 \cdot A^2 \cdot N_u^2 + N_u^4} = 0$$

$$N_1 - \frac{Y}{p} = 0 \qquad N_2 - \frac{Z}{q} = 0$$

$$R - \frac{Z^2 \cdot \left(Y^2 + p^2\right)^2}{Y^4 \cdot Z^2 + 2 \cdot Y^2 \cdot Z^2 \cdot p^2 + Y^2 \cdot p^2 \cdot q^2 + Z^2 \cdot p^4} = 0$$





$A = 0.64699$

$B = 0.74338$

$ab = 1.00000$

$N_1 = 1.54561$

$N_2 = 1.34521$

$R_1 = 0.89690$

$$\frac{N_2^2 \cdot (N_1^2+1)^2}{N_1^4 \cdot N_2^2+2 \cdot N_1^2 \cdot N_2^2+N_1^2+N_2^2} = 0.89690$$

$$\frac{(A^2+1)^2}{A^4+A^2 \cdot B^2+2 \cdot A^2+1} = 0.89690$$

$$R_1 - \frac{N_2^2 \cdot (N_1^2+1)^2}{N_1^4 \cdot N_2^2+2 \cdot N_1^2 \cdot N_2^2+N_1^2+N_2^2} = 0.00000$$

$$R_1 - \frac{(A^2+1)^2}{A^4+A^2 \cdot B^2+2 \cdot A^2+1} = 0.00000$$

$$\frac{(A^2+1)^2}{A^4+A^2 \cdot B^2+2 \cdot A^2+1} - \frac{N_2^2 \cdot (N_1^2+1)^2}{N_1^4 \cdot N_2^2+2 \cdot N_1^2 \cdot N_2^2+N_1^2+N_2^2} = 0.00000$$

$R_2 = 1.11495$

$$\frac{A^4+A^2 \cdot B^2+2 \cdot A^2+1}{(A^2+1)^2} = 1.11495$$

$$R_2 - \frac{A^4+A^2 \cdot B^2+2 \cdot A^2+1}{(A^2+1)^2} = 0.00000$$

3OBT2R4

Given.

Unit. $ab := 1$

$N_1 := 2.20601 \quad N_2 := 1.39960$

$A := \frac{1}{N_1} \quad B := \frac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1 + N_1^{\,2}} \qquad bd := \frac{N_1}{bN_1}$

$de := \frac{bd}{bN_1} \qquad bh := \sqrt{de^2 + N_2^{\,2}}$

$bf := \frac{N_2}{bh} \qquad fg := \frac{de \cdot bf}{bh} \qquad R_1 := \frac{N_2}{1 - fg}$

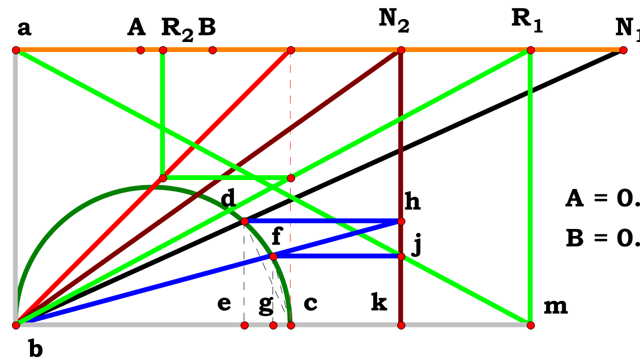
$R_2 := \frac{1}{R_1} \qquad R_1 = 1.867591$

Definitions.

$$R_1 - \frac{N_2^{\,3} \cdot \left(N_1^{\,2} + 1\right)^2 + N_1^{\,2} \cdot N_2}{N_2 \cdot \left(N_1^{\,2} + 1\right) \cdot \left(N_2 \cdot N_1^{\,2} - N_1 + N_2\right) + N_1^{\,2}} = 0$$

$$N_1 - \frac{1}{A} = 0 \qquad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{A^2 \cdot \left(A^2 + B^2\right) + \left(2 \cdot A^2 + 1\right)}{A^2 \cdot B^3 + B \cdot \left(A^2 + 1\right) \cdot \left(A^2 - B \cdot A + 1\right)} = 0 \qquad R_2 - \frac{A^2 \cdot B^3 + B \cdot \left(A^2 + 1\right) \cdot \left(A^2 - B \cdot A + 1\right)}{A^2 \cdot \left(A^2 + B^2\right) + \left(2 \cdot A^2 + 1\right)} = 0$$



$A = 0.45331$

$B = 0.71449$

$ab = 1.00000$

$N_1 = 2.20601$

$N_2 = 1.39960$

$R_1 = 1.86759$

$$\frac{N_2^3 \cdot (N_1^2+1)^2 + N_1^2 \cdot N_2}{N_2 \cdot (N_1^2+1) \cdot ((N_1^2 \cdot N_2 - N_1) + N_2) + N_1^2} = 1.86759$$

$$\frac{(A^2 \cdot (A^2+B^2) + 2 \cdot A^2 + 1)}{(A^2 \cdot B^3 + B \cdot (A^2+1) \cdot ((A^2 - A \cdot B) + 1))} = 1.86759$$

$$R_1 - \frac{N_2^3 \cdot (N_1^2+1)^2 + N_1^2 \cdot N_2}{N_2 \cdot (N_1^2+1) \cdot ((N_1^2 \cdot N_2 - N_1) + N_2) + N_1^2} = 0.00000$$

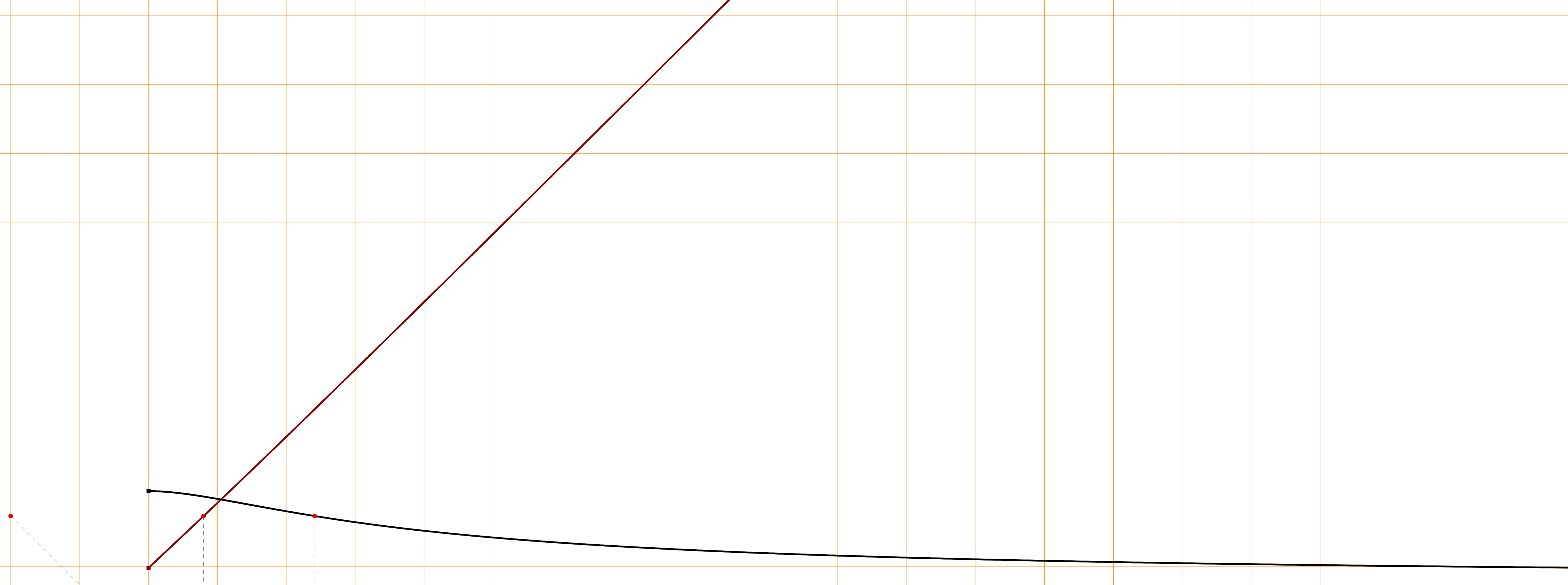
$$R_1 - \frac{(A^2 \cdot (A^2+B^2) + 2 \cdot A^2 + 1)}{(A^2 \cdot B^3 + B \cdot (A^2+1) \cdot ((A^2 - A \cdot B) + 1))} = 0.00000$$

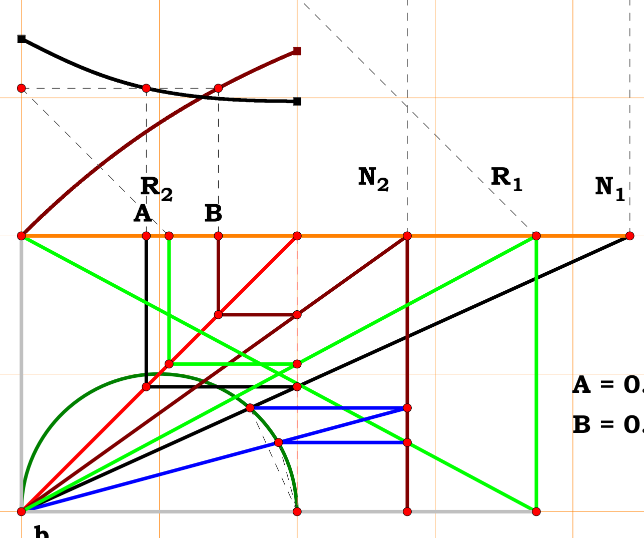
$$\frac{(A^2 \cdot (A^2+B^2) + 2 \cdot A^2 + 1)}{(A^2 \cdot B^3 + B \cdot (A^2+1) \cdot ((A^2 - A \cdot B) + 1))} - \frac{N_2^3 \cdot (N_1^2+1)^2 + N_1^2 \cdot N_2}{N_2 \cdot (N_1^2+1) \cdot ((N_1^2 \cdot N_2 - N_1) + N_2) + N_1^2} = 0.00000$$

$R_2 = 0.53545$

$$\frac{(A^2 \cdot B^3 + B \cdot (A^2+1) \cdot ((A^2 - A \cdot B) + 1))}{(A^2 \cdot (A^2+B^2) + 2 \cdot A^2 + 1)} = 0.53545$$

$$R_2 - \frac{(A^2 \cdot B^3 + B \cdot (A^2+1) \cdot ((A^2 - A \cdot B) + 1))}{(A^2 \cdot (A^2+B^2) + 2 \cdot A^2 + 1)} = 0.00000$$





$R_2 = 0.53545$

$$\frac{(A^2 \cdot B^3 + B \cdot (A^2+1) \cdot ((A^2 - A \cdot B)+1))}{(A^2 \cdot (A^2+B^2)+2 \cdot A^2+1)} = 0.53545$$

$$R_2 - \frac{(A^2 \cdot B^3 + B \cdot (A^2+1) \cdot ((A^2 - A \cdot B)+1))}{(A^2 \cdot (A^2+B^2)+2 \cdot A^2+1)} = 0.00000$$

$A = 0.45331$

$B = 0.71449$

$ab = 1.00000$

$N_1 = 2.20601$

$N_2 = 1.39960$

$R_1 = 1.86759$

$$\frac{N_2^3 \cdot (N_1^2+1)^2 + N_1^2 \cdot N_2}{N_2 \cdot (N_1^2+1) \cdot ((N_1^2 \cdot N_2 - N_1)+N_2)+N_1^2} = 1.86759$$

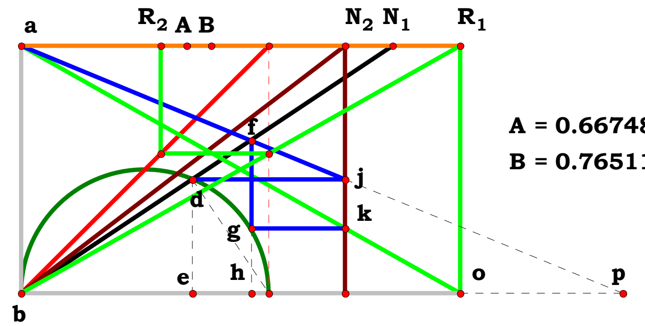
$$\frac{(A^2 \cdot (A^2+B^2)+2 \cdot A^2+1)}{(A^2 \cdot B^3 + B \cdot (A^2+1) \cdot ((A^2 - A \cdot B)+1))} = 1.86759$$

$$R_1 - \frac{N_2^3 \cdot (N_1^2+1)^2 + N_1^2 \cdot N_2}{N_2 \cdot (N_1^2+1) \cdot ((N_1^2 \cdot N_2 - N_1)+N_2)+N_1^2} = 0.00000$$

$$R_1 - \frac{(A^2 \cdot (A^2+B^2)+2 \cdot A^2+1)}{(A^2 \cdot B^3 + B \cdot (A^2+1) \cdot ((A^2 - A \cdot B)+1))} = 0.00000$$

$$\frac{(A^2 \cdot (A^2+B^2)+2 \cdot A^2+1)}{(A^2 \cdot B^3 + B \cdot (A^2+1) \cdot ((A^2 - A \cdot B)+1))} - \frac{N_2^3 \cdot (N_1^2+1)^2 + N_1^2 \cdot N_2}{N_2 \cdot (N_1^2+1) \cdot ((N_1^2 \cdot N_2 - N_1)+N_2)+N_1^2} = 0.00000$$

3OBT2R5



A = 0.66748
B = 0.76511

ab = 1.00000
N_1 = 1.49818
N_2 = 1.30701

R_1 = 1.76838

$$\frac{(N_2\cdot(((N_1+N_2+N_1^2\cdot N_2)-N_1^2)+N_1^3))}{((((N_1+N_2+N_1^2\cdot N_2)-N_1^2)+N_1^3)-\sqrt{N_1\cdot N_2\cdot(N_1^2+1)\cdot((((N_1+N_2+N_1^2\cdot N_2)-N_1^3\cdot N_2-N_1^2)+N_1^3)-N_1\cdot N_2)})} = 1.76838$$

$$\frac{(((A^3+A^2\cdot B+A)-A\cdot B)+B)}{(B\cdot((A^3+B\cdot((A^2-A)+1)+A)-\sqrt{(A+B)\cdot((A^4-A^3)+2\cdot A^2+1)-(2\cdot A^2+A\cdot B+1)}))} = 1.76838$$

R_2 = 0.56549

$$\frac{(B\cdot((A^3+B\cdot((A^2-A)+1)+A)-\sqrt{(A+B)\cdot((A^4-A^3)+2\cdot A^2+1)-(2\cdot A^2+A\cdot B+1)}))}{(((A^3+A^2\cdot B+A)-A\cdot B)+B)} = 0.56549$$

$$R_2-\frac{(B\cdot((A^3+B\cdot((A^2-A)+1)+A)-\sqrt{(A+B)\cdot((A^4-A^3)+2\cdot A^2+1)-(2\cdot A^2+A\cdot B+1)}))}{(((A^3+A^2\cdot B+A)-A\cdot B)+B)} = 0.00000$$

$$R_1-\frac{(N_2\cdot(((N_1+N_2+N_1^2\cdot N_2)-N_1^2)+N_1^3))}{((((N_1+N_2+N_1^2\cdot N_2)-N_1^2)+N_1^3)-\sqrt{N_1\cdot N_2\cdot(N_1^2+1)\cdot((((N_1+N_2+N_1^2\cdot N_2)-N_1^3\cdot N_2-N_1^2)+N_1^3)-N_1\cdot N_2)})} = 0.00000$$

$$R_1-\frac{(((A^3+A^2\cdot B+A)-A\cdot B)+B)}{(B\cdot((A^3+B\cdot((A^2-A)+1)+A)-\sqrt{(A+B)\cdot((A^4-A^3)+2\cdot A^2+1)-(2\cdot A^2+A\cdot B+1)}))} = 0.00000$$

$$\frac{(((A^3+A^2\cdot B+A)-A\cdot B)+B)}{(B\cdot((A^3+B\cdot((A^2-A)+1)+A)-\sqrt{(A+B)\cdot((A^4-A^3)+2\cdot A^2+1)-(2\cdot A^2+A\cdot B+1)}))}-\frac{(N_2\cdot(((N_1+N_2+N_1^2\cdot N_2)-N_1^2)+N_1^3))}{((((N_1+N_2+N_1^2\cdot N_2)-N_1^2)+N_1^3)-\sqrt{N_1\cdot N_2\cdot(N_1^2+1)\cdot((((N_1+N_2+N_1^2\cdot N_2)-N_1^3\cdot N_2-N_1^2)+N_1^3)-N_1\cdot N_2)})} = 0.00000$$

Given.

Unit. $ab := 1$

$N_1 := 1.44444 \quad N_2 := 1.20202$

$$A := \frac{1}{N_1} \quad B := \frac{1}{N_2}$$

Descriptions.

$$bN_1 := \sqrt{1+N_1^2} \quad bd := \frac{N_1}{bN_1} \quad de := \frac{bd}{bN_1}$$

$$bp := \frac{N_2}{1-de} \quad bh := \frac{N_1\cdot bp}{N_1+bp} \quad gh := \sqrt{bh\cdot(1-bh)}$$

$$R_1 := \frac{N_2}{1-gh} \quad R_2 := \frac{1}{R_1} \quad R_1 = 1.777157$$

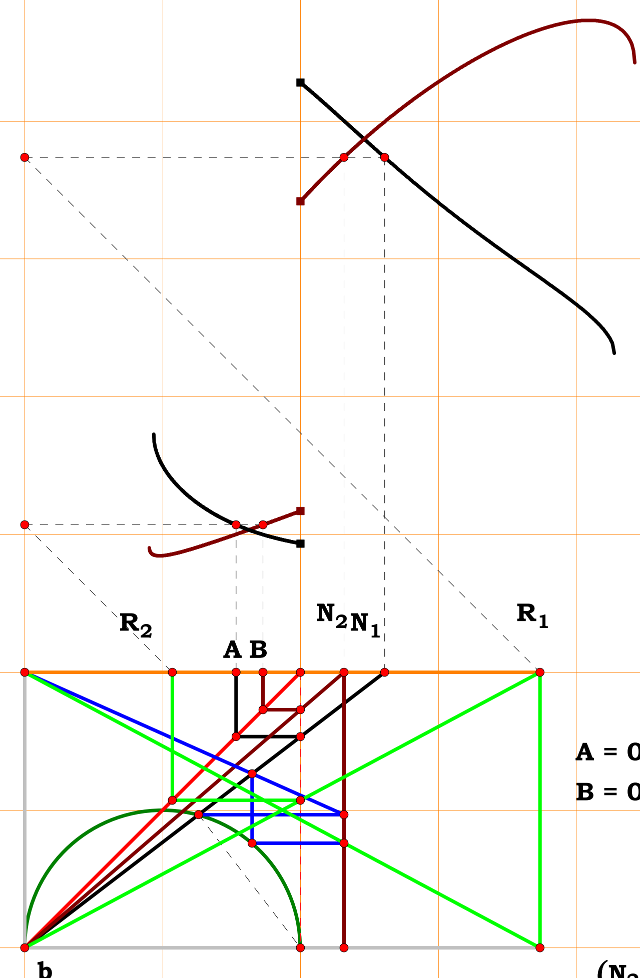
Definitions.

$$R_1-\frac{N_2\cdot\left(N_1+N_2+N_1^2\cdot N_2-N_1^2+N_1^3\right)}{N_1+N_2+N_1^2\cdot N_2-N_1^2+N_1^3-\sqrt{N_1\cdot N_2\cdot\left(N_1^2+1\right)\cdot\left(N_1+N_2+N_1^2\cdot N_2-N_1^3\cdot N_2-N_1^2+N_1^3-N_1\cdot N_2\right)}} = 0$$

$$N_1-\frac{1}{A} = 0 \qquad N_2-\frac{1}{B} = 0$$

$$R_1-\frac{\left(A^3+B\cdot A^2+A-B\cdot A+B\right)}{B\cdot\left[A-\sqrt{(A+B)\cdot\left(A^4-A^3+2\cdot A^2+1\right)-\left(2\cdot A^2+B\cdot A+1\right)}+A^3+B\cdot\left(A^2-A+1\right)\right]} = 0$$

$$R_2-\frac{B\cdot\left[A-\sqrt{(A+B)\cdot\left(A^4-A^3+2\cdot A^2+1\right)-\left(2\cdot A^2+B\cdot A+1\right)}+A^3+B\cdot\left(A^2-A+1\right)\right]}{\left(A^3+B\cdot A^2+A-B\cdot A+B\right)} = 0$$



A = 0.76617

B = 0.86380

ab = 1.00000

N_1 = 1.30519

N_2 = 1.15767

R_1 = 1.86857

$$\frac{(N_2\cdot(((N_1+N_2+N_1^2\cdot N_2)-N_1^2)+N_1^3))}{((((N_1+N_2+N_1^2\cdot N_2)-N_1^2)+N_1^3)-\sqrt{N_1\cdot N_2\cdot(N_1^2+1)\cdot((((N_1+N_2+N_1^2\cdot N_2)-N_1^3\cdot N_2-N_1^2)+N_1^3)-N_1\cdot N_2)})} = 1.86857$$

$$\frac{(((A^3+A^2\cdot B+A)-A\cdot B)+B)}{(B\cdot((A^3+B\cdot((A^2-A)+1)+A)-\sqrt{(A+B)\cdot((A^4-A^3)+2\cdot A^2+1)-(2\cdot A^2+A\cdot B+1)}))} = 1.86857$$

R_2 = 0.53517

$$\frac{(B\cdot((A^3+B\cdot((A^2-A)+1)+A)-\sqrt{(A+B)\cdot((A^4-A^3)+2\cdot A^2+1)-(2\cdot A^2+A\cdot B+1)}))}{(((A^3+A^2\cdot B+A)-A\cdot B)+B)} = 0.53517$$

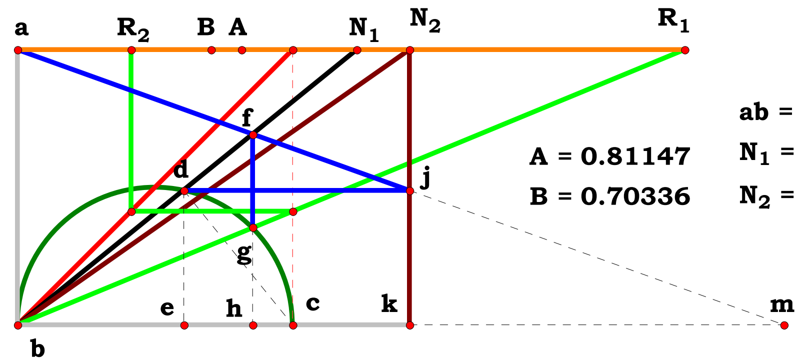
$$R_2-\frac{(B\cdot((A^3+B\cdot((A^2-A)+1)+A)-\sqrt{(A+B)\cdot((A^4-A^3)+2\cdot A^2+1)-(2\cdot A^2+A\cdot B+1)}))}{(((A^3+A^2\cdot B+A)-A\cdot B)+B)} = 0.00000$$

$$R_1-\frac{(N_2\cdot(((N_1+N_2+N_1^2\cdot N_2)-N_1^2)+N_1^3))}{((((N_1+N_2+N_1^2\cdot N_2)-N_1^2)+N_1^3)-\sqrt{N_1\cdot N_2\cdot(N_1^2+1)\cdot((((N_1+N_2+N_1^2\cdot N_2)-N_1^3\cdot N_2-N_1^2)+N_1^3)-N_1\cdot N_2)})} = 0.00000$$

$$R_1-\frac{(((A^3+A^2\cdot B+A)-A\cdot B)+B)}{(B\cdot((A^3+B\cdot((A^2-A)+1)+A)-\sqrt{(A+B)\cdot((A^4-A^3)+2\cdot A^2+1)-(2\cdot A^2+A\cdot B+1)}))} = 0.00000$$

$$\frac{(((A^3+A^2\cdot B+A)-A\cdot B)+B)}{(B\cdot((A^3+B\cdot((A^2-A)+1)+A)-\sqrt{(A+B)\cdot((A^4-A^3)+2\cdot A^2+1)-(2\cdot A^2+A\cdot B+1)}))}-\frac{(N_2\cdot(((N_1+N_2+N_1^2\cdot N_2)-N_1^2)+N_1^3))}{((((N_1+N_2+N_1^2\cdot N_2)-N_1^2)+N_1^3)-\sqrt{N_1\cdot N_2\cdot(N_1^2+1)\cdot((((N_1+N_2+N_1^2\cdot N_2)-N_1^3\cdot N_2-N_1^2)+N_1^3)-N_1\cdot N_2)})} = 0.00000$$

3OBT2R6



$ab = 1.00000$
$N_1 = 1.23233$
$N_2 = 1.42174$

$A = 0.81147$
$B = 0.70336$

$R_1 = 2.42046$

$$\frac{N_1 \cdot N_2 \cdot (N_1^2+1)}{\sqrt{N_1 \cdot N_2 \cdot (N_1^2+1) \cdot ((((N_1+N_2+N_1^2 \cdot N_2)-N_1^3 \cdot N_2-N_1^2)+N_1^3)-N_1 \cdot N_2)}} = 2.42046$$

$$\frac{(A^2+1)}{\sqrt{(A^2+1) \cdot (((A^2-A)+1) \cdot (A+B)-1)}} = 2.42046$$

$$R_1 - \frac{N_1 \cdot N_2 \cdot (N_1^2+1)}{\sqrt{N_1 \cdot N_2 \cdot (N_1^2+1) \cdot ((((N_1+N_2+N_1^2 \cdot N_2)-N_1^3 \cdot N_2-N_1^2)+N_1^3)-N_1 \cdot N_2)}} = 0.00000$$

$$R_1 - \frac{(A^2+1)}{\sqrt{(A^2+1) \cdot (((A^2-A)+1) \cdot (A+B)-1)}} = 0.00000$$

$$\frac{(A^2+1)}{\sqrt{(A^2+1) \cdot (((A^2-A)+1) \cdot (A+B)-1)}} - \frac{N_1 \cdot N_2 \cdot (N_1^2+1)}{\sqrt{N_1 \cdot N_2 \cdot (N_1^2+1) \cdot ((((N_1+N_2+N_1^2 \cdot N_2)-N_1^3 \cdot N_2-N_1^2)+N_1^3)-N_1 \cdot N_2)}} = 0.00000$$

$R_2 = 0.41315$

$$\frac{\sqrt{(A^2+1) \cdot (((A^2-A)+1) \cdot (A+B)-1)}}{(A^2+1)} = 0.41315$$

$$R_2 - \frac{\sqrt{(A^2+1) \cdot (((A^2-A)+1) \cdot (A+B)-1)}}{(A^2+1)} = 0.00000$$

Given.

Unit. $ab := 1$

$N_1 := 1.23233 \quad N_2 := 1.42174$

$A := \frac{1}{N_1} \quad B := \frac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1 + N_1^2} \quad bd := \frac{N_1}{bN_1} \quad de := \frac{bd}{bN_1}$

$bm := \frac{N_2}{1 - de} \quad bh := \frac{N_1 \cdot bm}{N_1 + bm} \quad gh := \sqrt{bh \cdot (1 - bh)}$

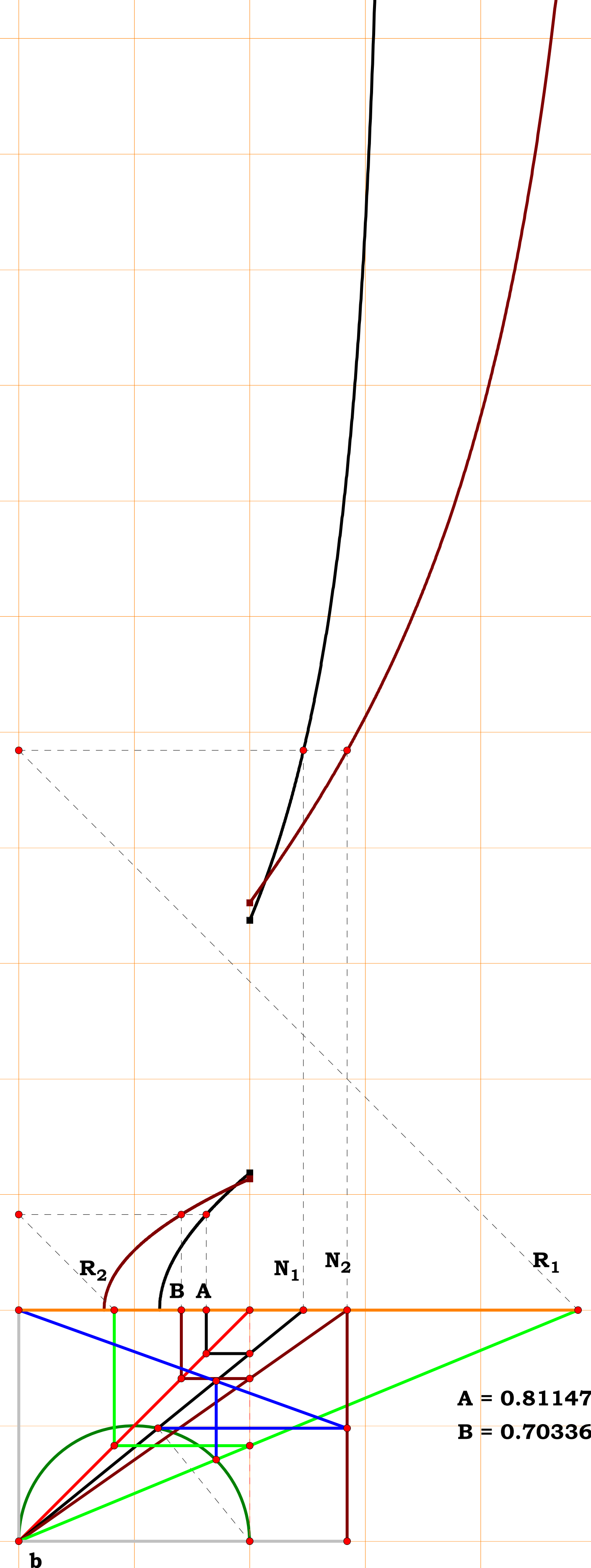
$R_1 := \frac{bh}{gh} \quad R_2 := \frac{1}{R_1} \quad R_1 = 2.420452$

Definitions.

$$R_1 - \frac{N_1 \cdot N_2 \cdot \left(N_1^2 + 1\right)}{\sqrt{N_1 \cdot N_2 \cdot \left(N_1^2 + 1\right) \cdot \left(N_1 + N_2 + N_1^2 \cdot N_2 - N_1^3 \cdot N_2 - N_1^2 + N_1^3 - N_1 \cdot N_2\right)}} = 0$$

$N_1 - \frac{1}{A} = 0 \quad N_2 - \frac{1}{B} = 0$

$$R_1 - \frac{\left(A^2 + 1\right)}{\sqrt{\left(A^2 + 1\right) \cdot \left[\left(A^2 - A + 1\right) \cdot (A + B) - 1\right]}} = 0 \qquad R_2 - \frac{\sqrt{\left(A^2 + 1\right) \cdot \left[\left(A^2 - A + 1\right) \cdot (A + B) - 1\right]}}{\left(A^2 + 1\right)} = 0$$



$$R_1-\frac{N_1\cdot N_2\cdot(N_1^2+1)}{\sqrt{N_1\cdot N_2\cdot(N_1^2+1)\cdot((((N_1+N_2+N_1^2\cdot N_2)-N_1^3\cdot N_2-N_1^2)+N_1^3)-N_1\cdot N_2)}} = 0.00000$$

$$R_1-\frac{(A^2+1)}{\sqrt{(A^2+1)\cdot(((A^2-A)+1)\cdot(A+B)-1)}} = 0.00000$$

$$\frac{(A^2+1)}{\sqrt{(A^2+1)\cdot(((A^2-A)+1)\cdot(A+B)-1)}}-\frac{N_1\cdot N_2\cdot(N_1^2+1)}{\sqrt{N_1\cdot N_2\cdot(N_1^2+1)\cdot((((N_1+N_2+N_1^2\cdot N_2)-N_1^3\cdot N_2-N_1^2)+N_1^3)-N_1\cdot N_2)}} = 0.00000$$

$A = 0.81147$

$B = 0.70336$

$ab = 1.00000$

$N_1 = 1.23233$

$N_2 = 1.42174$

$R_1 = 2.42046$

$$\frac{N_1\cdot N_2\cdot(N_1^2+1)}{\sqrt{N_1\cdot N_2\cdot(N_1^2+1)\cdot((((N_1+N_2+N_1^2\cdot N_2)-N_1^3\cdot N_2-N_1^2)+N_1^3)-N_1\cdot N_2)}} = 2.42046$$

$$\frac{(A^2+1)}{\sqrt{(A^2+1)\cdot(((A^2-A)+1)\cdot(A+B)-1)}} = 2.42046$$

$R_2 = 0.41315$

$$\frac{\sqrt{(A^2+1)\cdot(((A^2-A)+1)\cdot(A+B)-1)}}{(A^2+1)} = 0.41315$$

$$R_2-\frac{\sqrt{(A^2+1)\cdot(((A^2-A)+1)\cdot(A+B)-1)}}{(A^2+1)} = 0.00000$$

3OBT2R7

Given.

Unit. $ab := 1$

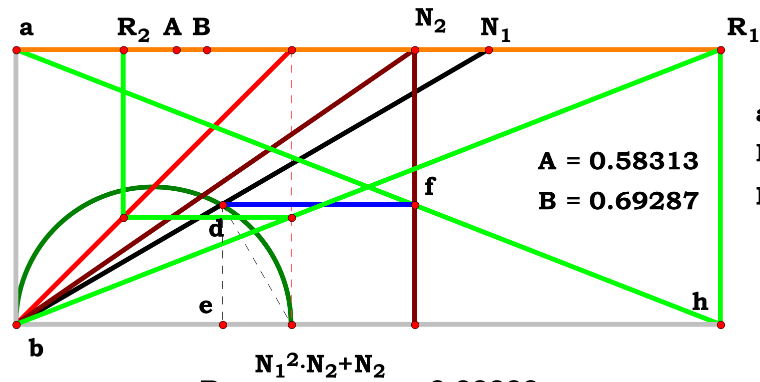
$N_1 := 1.71489 \quad N_2 := 1.44327$

$A := \dfrac{1}{N_1} \quad B := \dfrac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1 + N_1^{\,2}} \quad bd := \dfrac{N_1}{bN_1} \quad de := \dfrac{bd}{bN_1}$

$R_1 := \dfrac{N_2}{1 - de} \quad R_2 := \dfrac{1}{R_1} \quad R_1 = 2.555173$



$R_1 - \dfrac{N_1^2 \cdot N_2 + N_2}{(N_1^2 - N_1) + 1} = 0.00000$

$R_1 - \dfrac{A^2+1}{B\cdot((A^2-A)+1)} = 0.00000$

$\dfrac{A^2+1}{B\cdot((A^2-A)+1)} - \dfrac{N_1^2 \cdot N_2 + N_2}{(N_1^2 - N_1) + 1} = 0.00000$

$ab = 1.00000$

$N_1 = 1.71489$

$N_2 = 1.44327$

$R_1 = 2.55518$

$\dfrac{N_1^2 \cdot N_2 + N_2}{(N_1^2 - N_1) + 1} = 2.55518$

$\dfrac{A^2+1}{B\cdot((A^2-A)+1)} = 2.55518$

$R_2 = 0.39136$

$\dfrac{B\cdot((A^2-A)+1)}{A^2+1} = 0.39136$

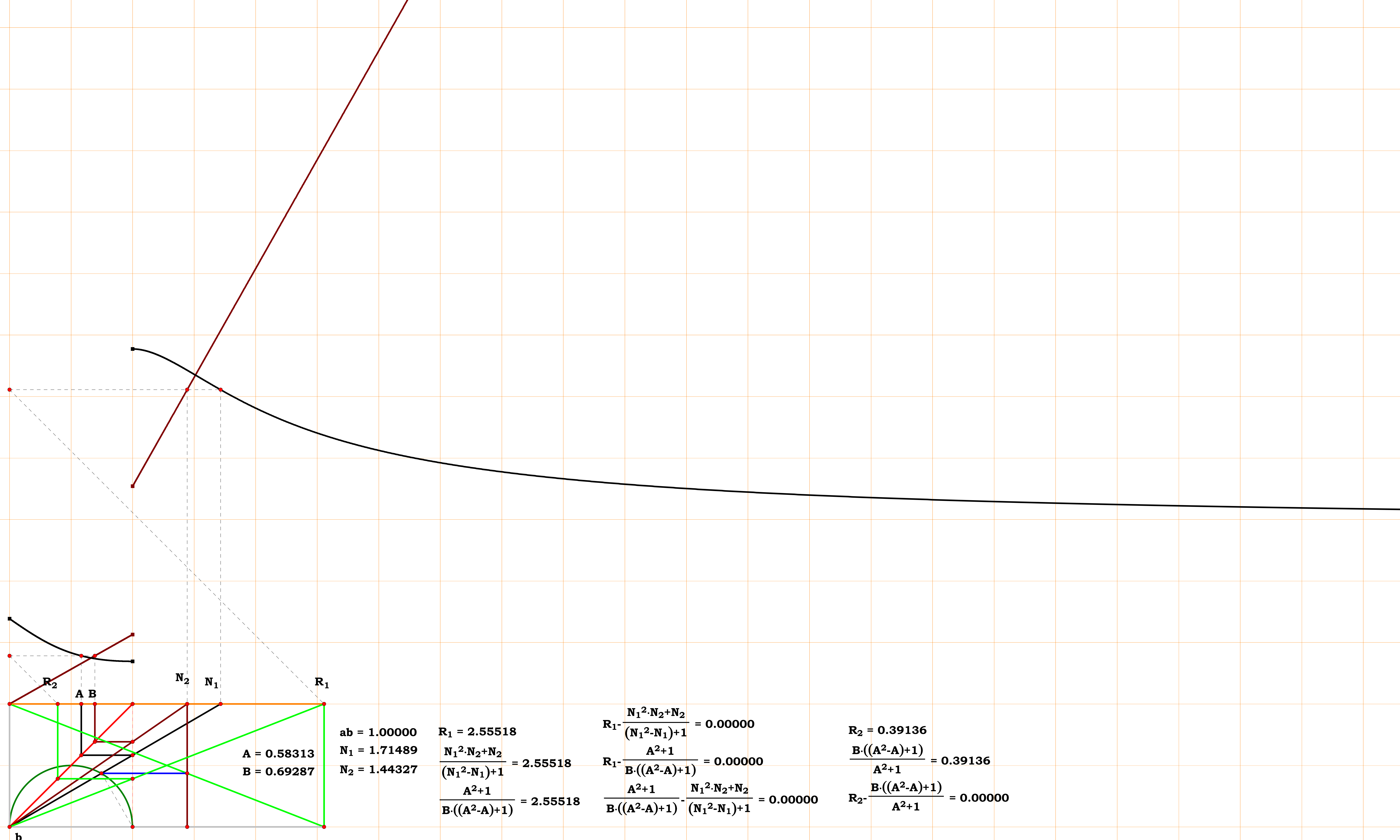
$R_2 - \dfrac{B\cdot((A^2-A)+1)}{A^2+1} = 0.00000$

Definitions.

$$R_1 - \frac{N_1^{\,2} \cdot N_2 + N_2}{N_1^{\,2} - N_1 + 1} = 0$$

$$N_1 - \frac{1}{A} = 0 \qquad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{\left(A^2 + 1\right)}{B \cdot \left(A^2 - A + 1\right)} = 0 \qquad R_2 - \frac{B \cdot \left(A^2 - A + 1\right)}{\left(A^2 + 1\right)} = 0$$



$ab = 1.00000$

$N_1 = 1.71489$

$N_2 = 1.44327$

$R_1 = 2.55518$

$$\frac{N_1^2 \cdot N_2 + N_2}{(N_1^2 - N_1) + 1} = 2.55518$$

$$\frac{A^2 + 1}{B \cdot ((A^2 - A) + 1)} = 2.55518$$

$$R_1 - \frac{N_1^2 \cdot N_2 + N_2}{(N_1^2 - N_1) + 1} = 0.00000$$

$$R_1 - \frac{A^2 + 1}{B \cdot ((A^2 - A) + 1)} = 0.00000$$

$$\frac{A^2 + 1}{B \cdot ((A^2 - A) + 1)} - \frac{N_1^2 \cdot N_2 + N_2}{(N_1^2 - N_1) + 1} = 0.00000$$

$R_2 = 0.39136$

$$\frac{B \cdot ((A^2 - A) + 1)}{A^2 + 1} = 0.39136$$

$$R_2 - \frac{B \cdot ((A^2 - A) + 1)}{A^2 + 1} = 0.00000$$

3OBT2R8

Given.

Unit. $ab := 1$

$N_1 := 1.78943 \quad N_2 := 1.21586$

$A := \dfrac{1}{N_1} \quad B := \dfrac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1 + N_1^{\,2}} \quad bd := \dfrac{N_1}{bN_1} \quad de := \dfrac{bd}{bN_1}$

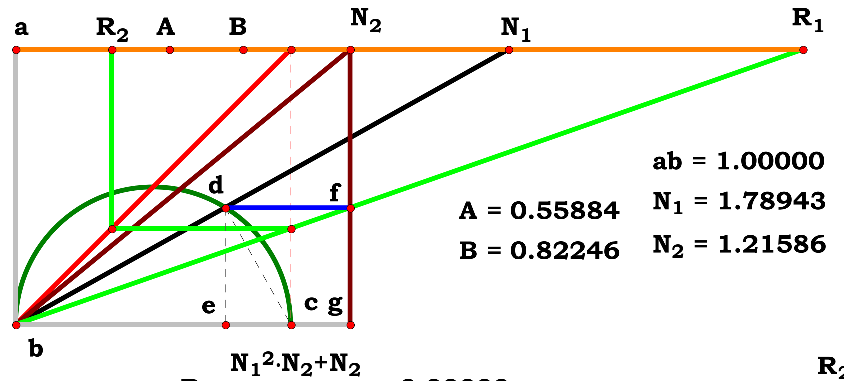
$R_1 := \dfrac{N_2}{de} \quad R_2 := \dfrac{1}{R_1} \quad R_1 = 2.855164$

Definitions.

$$R_1 - \frac{N_1^{\,2} \cdot N_2 + N_2}{N_1} = 0$$

$$N_1 - \frac{1}{A} = 0 \qquad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{A^2 + 1}{A \cdot B} = 0 \qquad R_2 - \frac{A \cdot B}{A^2 + 1} = 0$$



$R_1 - \dfrac{N_1^2 \cdot N_2 + N_2}{N_1} = 0.00000$

$R_1 - \dfrac{(A^2+1)}{(A \cdot B)} = 0.00000$

$\dfrac{(A^2+1)}{(A \cdot B)} - \dfrac{N_1^2 \cdot N_2 + N_2}{N_1} = 0.00000$

$A = 0.55884$

$B = 0.82246$

$ab = 1.00000$

$N_1 = 1.78943$

$N_2 = 1.21586$

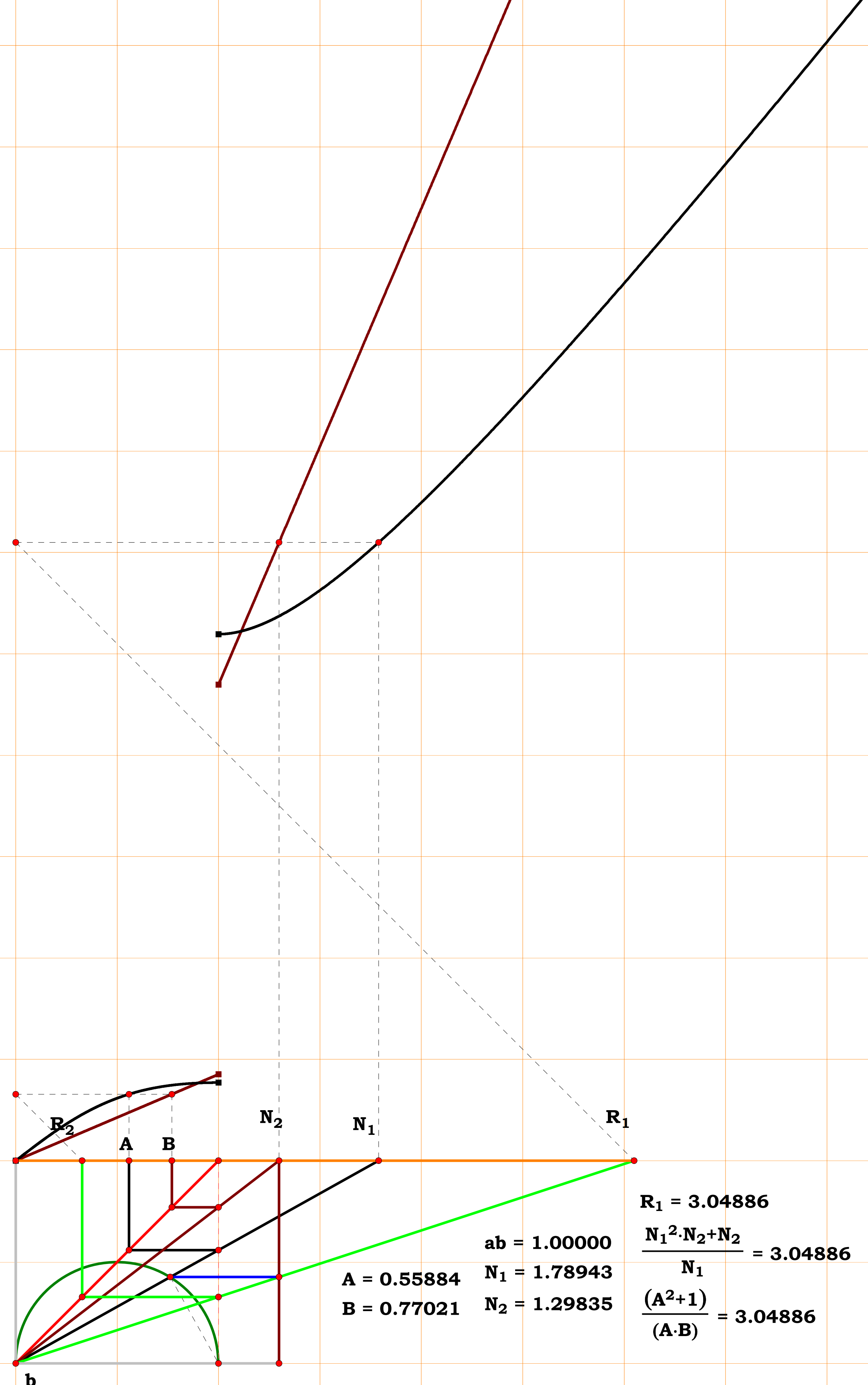
$R_1 = 2.85517$

$\dfrac{N_1^2 \cdot N_2 + N_2}{N_1} = 2.85517$

$\dfrac{(A^2+1)}{(A \cdot B)} = 2.85517$

$R_2 = 0.35024$

$\dfrac{(A \cdot B)}{(A^2+1)} = 0.35024$



$A = 0.55884$

$B = 0.77021$

$ab = 1.00000$

$N_1 = 1.78943$

$N_2 = 1.29835$

$R_1 = 3.04886$

$\frac{N_1{}^2 \cdot N_2 + N_2}{N_1} = 3.04886$

$\frac{(A^2+1)}{(A \cdot B)} = 3.04886$

$R_1 - \frac{N_1{}^2 \cdot N_2 + N_2}{N_1} = 0.00000$

$R_1 - \frac{(A^2+1)}{(A \cdot B)} = 0.00000$

$\frac{(A^2+1)}{(A \cdot B)} - \frac{N_1{}^2 \cdot N_2 + N_2}{N_1} = 0.00000$

$R_2 = 0.32799$

$\frac{(A \cdot B)}{(A^2+1)} = 0.32799$

3OBT2R9

Given.

Unit. $ab := 1$

$N_1 := 1.13373 \quad N_2 := 1.34560$

$A := \dfrac{1}{N_1} \quad B := \dfrac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1 + N_1^{\,2}} \quad bd := \dfrac{N_1}{bN_1} \quad de := \dfrac{bd}{bN_1}$

$bo := \dfrac{N_2}{1 - de} \quad bh := \dfrac{N_1 \cdot bo}{N_1 + bo} \quad gh := \sqrt{bh \cdot (1 - bh)}$

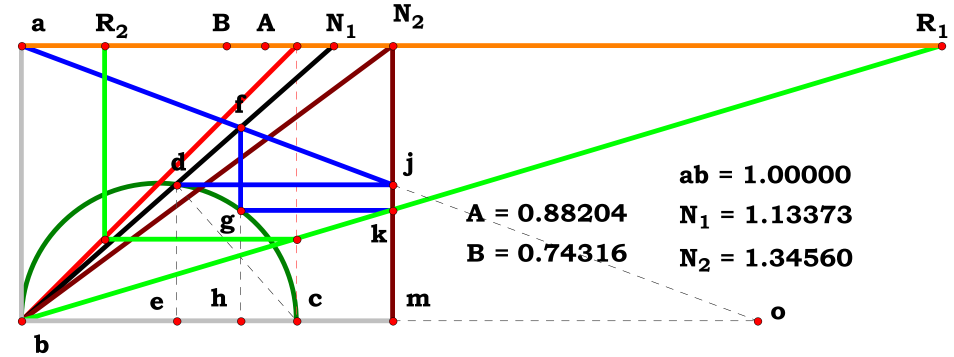
$R_1 := \dfrac{N_2}{gh} \quad R_2 := \dfrac{1}{R_1} \quad R_1 = 3.338244$

Definitions.

$$R_1 - \frac{\left(N_1^{\,2}+1\right)\cdot N_2^{\,2} + \left(N_1^{\,3} - N_1^{\,2} + N_1\right)\cdot N_2}{\sqrt{N_1 \cdot N_2 \cdot \left(N_1^{\,2}+1\right)\cdot\left[\left(1-N_2\right)\cdot\left(N_1^{\,3} - N_1^{\,2} + N_1\right) + N_2\right]}} = 0$$

$N_1 - \dfrac{1}{A} = 0 \qquad N_2 - \dfrac{1}{B} = 0$

$$R_1 - \frac{\left(A^3 + B\cdot A^2 + A - B\cdot A + B\right)}{B\cdot\sqrt{\left(A^2+1\right)\cdot\left[A^3 + \left(A^2 - A + 1\right)\cdot(B-1)\right]}} = 0 \qquad R_2 - \frac{B\cdot\sqrt{\left(A^2+1\right)\cdot\left[A^3 + \left(A^2 - A + 1\right)\cdot(B-1)\right]}}{\left(A^3 + B\cdot A^2 + A - B\cdot A + B\right)} = 0$$



$$R_1 - \frac{(N_2^2\cdot(N_1^2+1)+N_2\cdot((N_1^3-N_1^2)+N_1))}{\sqrt{N_1\cdot N_2\cdot(N_1^2+1)\cdot((1-N_2)\cdot((N_1^3-N_1^2)+N_1)+N_2)}} = 0.00000$$

$$R_1 - \frac{(((A^3+A^2\cdot B+A)-A\cdot B)+B)}{(B\cdot\sqrt{(A^2+1)\cdot(A^3+((A^2-A)+1)\cdot(B-1))})} = 0.00000$$

$$\frac{(((A^3+A^2\cdot B+A)-A\cdot B)+B)}{(B\cdot\sqrt{(A^2+1)\cdot(A^3+((A^2-A)+1)\cdot(B-1))})} - \frac{(N_2^2\cdot(N_1^2+1)+N_2\cdot((N_1^3-N_1^2)+N_1))}{\sqrt{N_1\cdot N_2\cdot(N_1^2+1)\cdot((1-N_2)\cdot((N_1^3-N_1^2)+N_1)+N_2)}} = 0.00000$$

$R_1 = 3.33826$

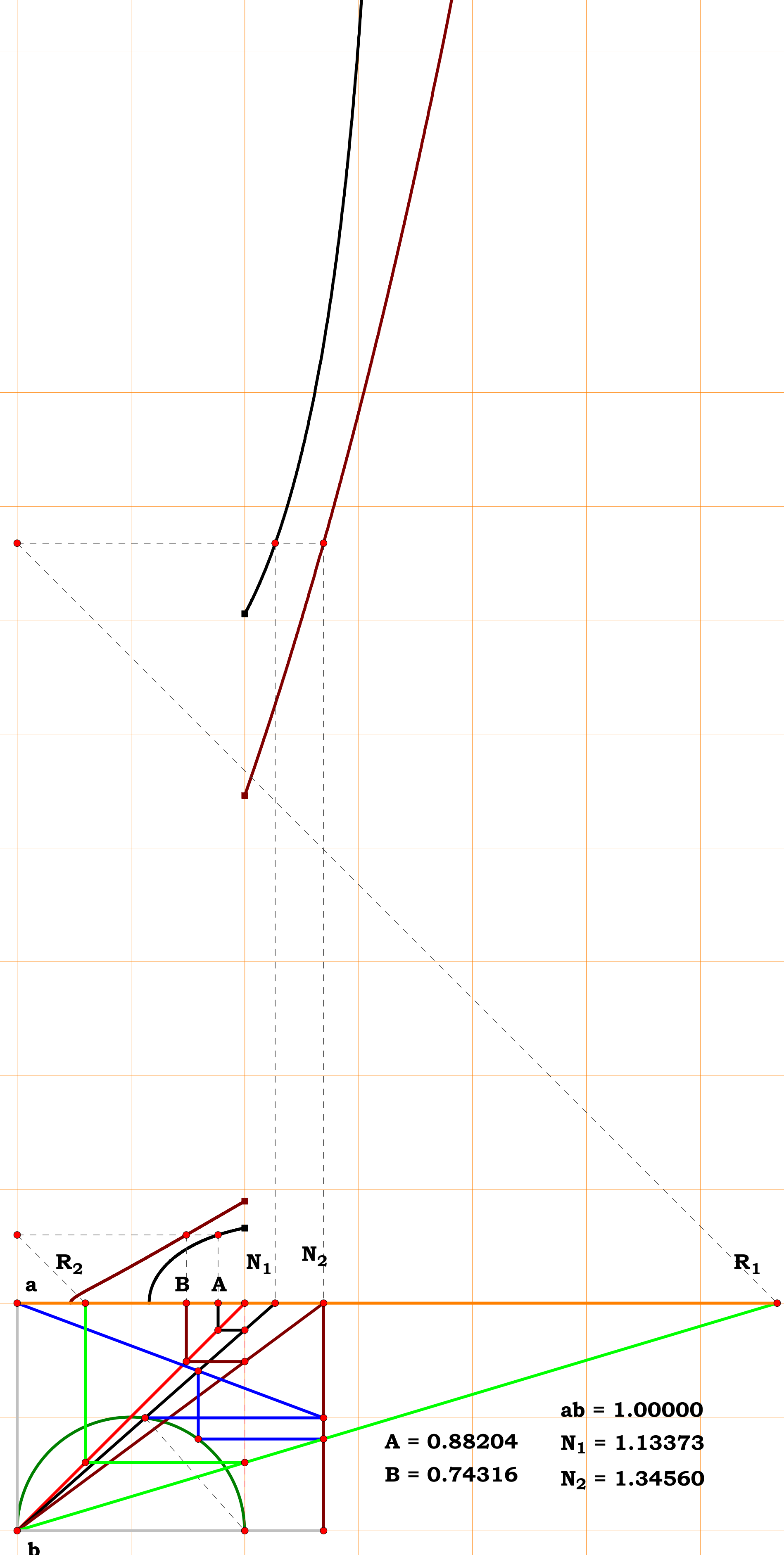
$$\frac{(N_2^2\cdot(N_1^2+1)+N_2\cdot((N_1^3-N_1^2)+N_1))}{\sqrt{N_1\cdot N_2\cdot(N_1^2+1)\cdot((1-N_2)\cdot((N_1^3-N_1^2)+N_1)+N_2)}} = 3.33826$$

$$\frac{(((A^3+A^2\cdot B+A)-A\cdot B)+B)}{(B\cdot\sqrt{(A^2+1)\cdot(A^3+((A^2-A)+1)\cdot(B-1))})} = 3.33826$$

$R_2 = 0.29956$

$$\frac{(B\cdot\sqrt{(A^2+1)\cdot(A^3+((A^2-A)+1)\cdot(B-1))})}{(((A^3+A^2\cdot B+A)-A\cdot B)+B)} = 0.29956$$

$$R_2 - \frac{(B\cdot\sqrt{(A^2+1)\cdot(A^3+((A^2-A)+1)\cdot(B-1))})}{(((A^3+A^2\cdot B+A)-A\cdot B)+B)} = 0.00000$$



$$R_1-\frac{\left(N_2^2\cdot(N_1^2+1)+N_2\cdot((N_1^3-N_1^2)+N_1)\right)}{\sqrt{N_1\cdot N_2\cdot(N_1^2+1)\cdot((1-N_2)\cdot((N_1^3-N_1^2)+N_1)+N_2)}}=0.00000$$

$$R_1-\frac{(((A^3+A^2\cdot B+A)-A\cdot B)+B)}{\left(B\cdot\sqrt{(A^2+1)\cdot(A^3+((A^2-A)+1)\cdot(B-1))}\right)}=0.00000$$

$$\frac{(((A^3+A^2\cdot B+A)-A\cdot B)+B)}{\left(B\cdot\sqrt{(A^2+1)\cdot(A^3+((A^2-A)+1)\cdot(B-1))}\right)}-\frac{\left(N_2^2\cdot(N_1^2+1)+N_2\cdot((N_1^3-N_1^2)+N_1)\right)}{\sqrt{N_1\cdot N_2\cdot(N_1^2+1)\cdot((1-N_2)\cdot((N_1^3-N_1^2)+N_1)+N_2)}}=0.00000$$

$R_1 = 3.33826$

$$\frac{\left(N_2^2\cdot(N_1^2+1)+N_2\cdot((N_1^3-N_1^2)+N_1)\right)}{\sqrt{N_1\cdot N_2\cdot(N_1^2+1)\cdot((1-N_2)\cdot((N_1^3-N_1^2)+N_1)+N_2)}}=3.33826$$

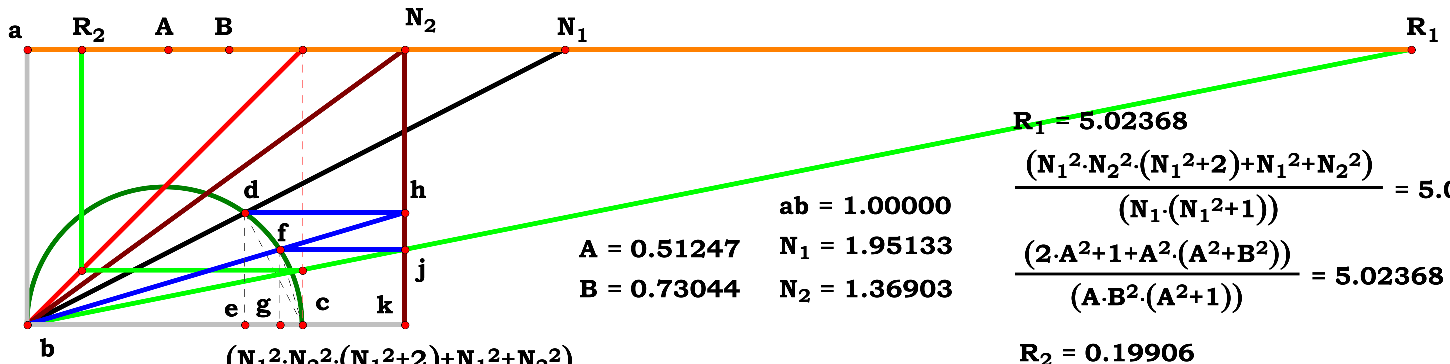
$$\frac{(((A^3+A^2\cdot B+A)-A\cdot B)+B)}{\left(B\cdot\sqrt{(A^2+1)\cdot(A^3+((A^2-A)+1)\cdot(B-1))}\right)}=3.33826$$

$R_2 = 0.29956$

$$\frac{\left(B\cdot\sqrt{(A^2+1)\cdot(A^3+((A^2-A)+1)\cdot(B-1))}\right)}{(((A^3+A^2\cdot B+A)-A\cdot B)+B)}=0.29956$$

$$R_2-\frac{\left(B\cdot\sqrt{(A^2+1)\cdot(A^3+((A^2-A)+1)\cdot(B-1))}\right)}{(((A^3+A^2\cdot B+A)-A\cdot B)+B)}=0.00000$$

3OBT02R10



$R_1 = 5.02368$

$\frac{(N_1^2 \cdot N_2^2 \cdot (N_1^2+2)+N_1^2+N_2^2)}{(N_1 \cdot (N_1^2+1))} = 5.02368$

$\frac{(2 \cdot A^2+1+A^2 \cdot (A^2+B^2))}{(A \cdot B^2 \cdot (A^2+1))} = 5.02368$

$ab = 1.00000$

$A = 0.51247$ $\quad N_1 = 1.95133$

$B = 0.73044$ $\quad N_2 = 1.36903$

$R_1 - \frac{(N_1^2 \cdot N_2^2 \cdot (N_1^2+2)+N_1^2+N_2^2)}{(N_1 \cdot (N_1^2+1))} = 0.00000$

$R_1 - \frac{(2 \cdot A^2+1+A^2 \cdot (A^2+B^2))}{(A \cdot B^2 \cdot (A^2+1))} = 0.00000$

$\frac{(2 \cdot A^2+1+A^2 \cdot (A^2+B^2))}{(A \cdot B^2 \cdot (A^2+1))} - \frac{(N_1^2 \cdot N_2^2 \cdot (N_1^2+2)+N_1^2+N_2^2)}{(N_1 \cdot (N_1^2+1))} = 0.00000$

$R_2 = 0.19906$

$\frac{(A \cdot B^2 \cdot (A^2+1))}{(2 \cdot A^2+1+A^2 \cdot (A^2+B^2))} = 0.19906$

$R_2 - \frac{(A \cdot B^2 \cdot (A^2+1))}{(2 \cdot A^2+1+A^2 \cdot (A^2+B^2))} = 0.00000$

Given.

Unit. $ab := 1$

$N_1 := 1.95133 \quad N_2 := 1.36903$

$A := \frac{1}{N_1} \quad B := \frac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1 + N_1^2} \quad bd := \frac{N_1}{bN_1} \quad de := \frac{bd}{bN_1}$

$bh := \sqrt{N_2^2 + de^2} \quad bf := \frac{N_2}{bh} \quad fg := \frac{de \cdot bf}{bh}$

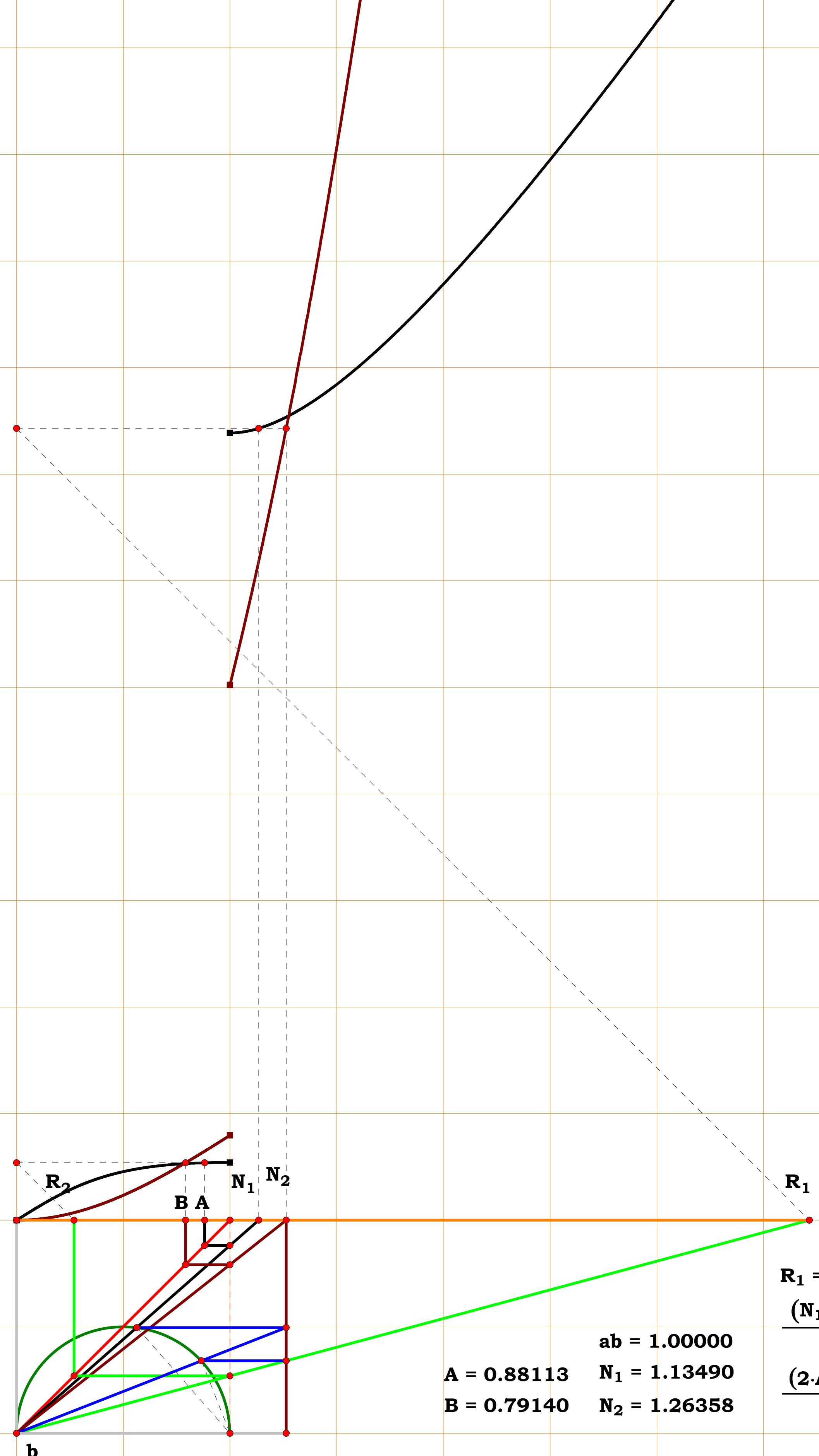
$R_1 := \frac{N_2}{fg} \quad R_2 := \frac{1}{R_1} \quad R_1 = 5.023639$

Definitions.

$$R_1 - \frac{N_1^2 \cdot N_2^2 \cdot \left(N_1^2 + 2\right) + N_1^2 + N_2^2}{N_1 \cdot \left(N_1^2 + 1\right)} = 0$$

$$N_1 - \frac{1}{A} = 0 \qquad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{\left(2 \cdot A^2 + 1\right) + A^2 \cdot \left(A^2 + B^2\right)}{A \cdot B^2 \cdot \left(A^2 + 1\right)} = 0 \qquad R_2 - \frac{A \cdot B^2 \cdot \left(A^2 + 1\right)}{A^4 + A^2 \cdot B^2 + 2 \cdot A^2 + 1} = 0$$



$ab = 1.00000$

$A = 0.88113$ $\quad N_1 = 1.13490$

$B = 0.79140$ $\quad N_2 = 1.26358$

$R_1 = 3.71490$

$$\frac{(N_1^2 \cdot N_2^2 \cdot (N_1^2+2)+N_1^2+N_2^2)}{(N_1 \cdot (N_1^2+1))} = 3.71490$$

$$\frac{(2 \cdot A^2+1+A^2 \cdot (A^2+B^2))}{(A \cdot B^2 \cdot (A^2+1))} = 3.71490$$

$$R_1 - \frac{(N_1^2 \cdot N_2^2 \cdot (N_1^2+2)+N_1^2+N_2^2)}{(N_1 \cdot (N_1^2+1))} = 0.00000$$

$$R_1 - \frac{(2 \cdot A^2+1+A^2 \cdot (A^2+B^2))}{(A \cdot B^2 \cdot (A^2+1))} = 0.00000$$

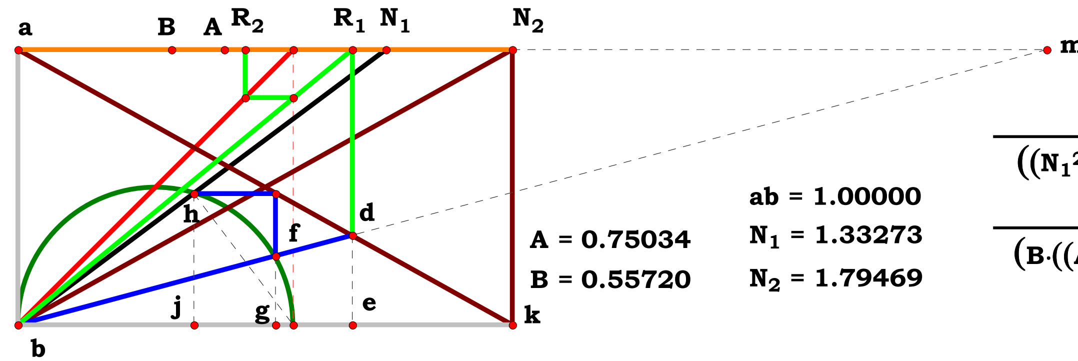
$$\frac{(2 \cdot A^2+1+A^2 \cdot (A^2+B^2))}{(A \cdot B^2 \cdot (A^2+1))} - \frac{(N_1^2 \cdot N_2^2 \cdot (N_1^2+2)+N_1^2+N_2^2)}{(N_1 \cdot (N_1^2+1))} = 0.00000$$

$R_2 = 0.26919$

$$\frac{(A \cdot B^2 \cdot (A^2+1))}{(2 \cdot A^2+1+A^2 \cdot (A^2+B^2))} = 0.26919$$

$$R_2 - \frac{(A \cdot B^2 \cdot (A^2+1))}{(2 \cdot A^2+1+A^2 \cdot (A^2+B^2))} = 0.00000$$

3OBT3R0



A = 0.75034
B = 0.55720

ab = 1.00000
N_1 = 1.33273
N_2 = 1.79469

R_1 = 1.21228

$$\frac{(N_2\cdot((N_1^2-N_1)+1))}{((N_1^2-N_1)+1+\sqrt{N_2\cdot((N_1^2-N_1)+1)\cdot((N_1^2-N_1^2\cdot N_2-N_2)+N_1\cdot N_2+1)})} = 1.21228$$

$$\frac{((A^2-A)+1)}{(B\cdot((A^2-A)+1)+\sqrt{((A^2-A)+1)\cdot(((B-1)\cdot A^2+A+B)-1)})} = 1.21228$$

R_2 = 0.82489

$$R_1-\frac{(N_2\cdot((N_1^2-N_1)+1))}{((N_1^2-N_1)+1+\sqrt{N_2\cdot((N_1^2-N_1)+1)\cdot((N_1^2-N_1^2\cdot N_2-N_2)+N_1\cdot N_2+1)})} = 0.00000$$

$$\frac{(B\cdot((A^2-A)+1)+\sqrt{((A^2-A)+1)\cdot(((B-1)\cdot A^2+A+B)-1)})}{((A^2-A)+1)} = 0.82489$$

$$R_1-\frac{((A^2-A)+1)}{(B\cdot((A^2-A)+1)+\sqrt{((A^2-A)+1)\cdot(((B-1)\cdot A^2+A+B)-1)})} = 0.00000$$

$$R_2-\frac{(B\cdot((A^2-A)+1)+\sqrt{((A^2-A)+1)\cdot(((B-1)\cdot A^2+A+B)-1)})}{((A^2-A)+1)} = 0.00000$$

$$\frac{((A^2-A)+1)}{(B\cdot((A^2-A)+1)+\sqrt{((A^2-A)+1)\cdot(((B-1)\cdot A^2+A+B)-1)})}-\frac{(N_2\cdot((N_1^2-N_1)+1))}{((N_1^2-N_1)+1+\sqrt{N_2\cdot((N_1^2-N_1)+1)\cdot((N_1^2-N_1^2\cdot N_2-N_2)+N_1\cdot N_2+1)})} = 0.00000$$

Given.

Unit. $ab := 1$

$N_1 := 1.33273 \quad N_2 := 1.79469$

$A := \frac{1}{N_1} \quad B := \frac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1+N_1^2} \quad bh := \frac{N_1}{bN_1} \quad hj := \frac{bh}{bN_1}$

$jk := N_2\cdot hj \quad bg := N_2 - jk \quad fg := \sqrt{bg\cdot(1-bg)}$

$am := \frac{bg}{fg} \quad R_1 := \frac{am\cdot N_2}{am+N_2} \quad R_2 := \frac{1}{R_1} \quad R_1 = 1.212272$

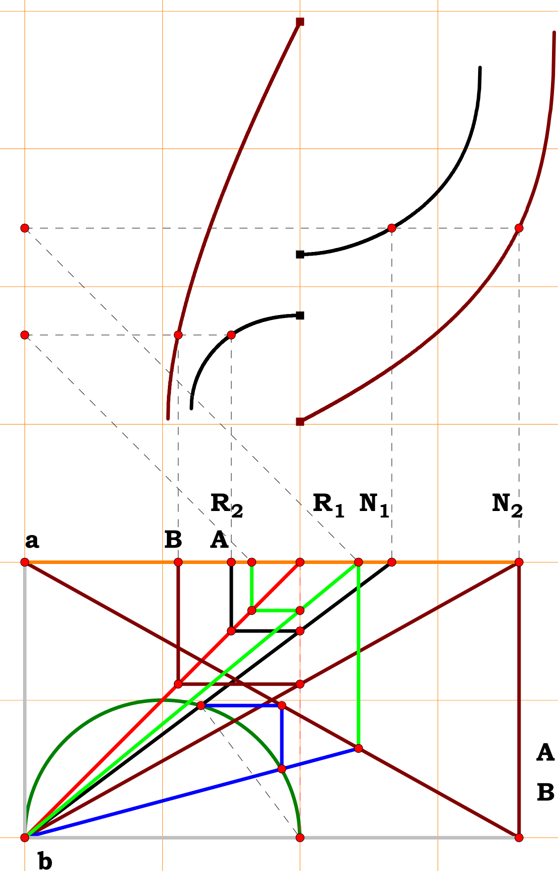
Definitions.

$$R_1-\frac{N_2\cdot\left(N_1^2-N_1+1\right)}{\sqrt{N_2\cdot\left(N_1^2-N_1+1\right)\cdot\left(N_1^2-N_1^2\cdot N_2-N_2+N_1\cdot N_2+1\right)}-N_1+N_1^2+1} = 0$$

$N_1-\frac{1}{A} = 0 \qquad N_2-\frac{1}{B} = 0$

$$R_1-\frac{\left(A^2-A+1\right)}{\sqrt{\left(A^2-A+1\right)\cdot\left[(B-1)\cdot A^2+(A+B-1)\right]}+B\cdot\left(A^2-A+1\right)} = 0$$

$$R_2-\frac{B+\sqrt{\left(A^2-A+1\right)\cdot\left[(B-1)\cdot A^2+A+B-1\right]}-A\cdot B+A^2\cdot B}{A^2-A+1} = 0$$



$A = 0.75034$

$B = 0.55720$

$ab = 1.00000$

$N_1 = 1.33273$

$N_2 = 1.79469$

$R_1 = 1.21228$

$$\frac{(N_2\cdot((N_1{}^2-N_1)+1))}{((N_1{}^2-N_1)+1+\sqrt{N_2\cdot((N_1{}^2-N_1)+1)\cdot((N_1{}^2-N_1{}^2\cdot N_2-N_2)+N_1\cdot N_2+1)})} = 1.21228$$

$$\frac{((A^2-A)+1)}{(B\cdot((A^2-A)+1)+\sqrt{((A^2-A)+1)\cdot(((B-1)\cdot A^2+A+B)-1)})} = 1.21228$$

$R_2 = 0.82489$

$$\frac{(B\cdot((A^2-A)+1)+\sqrt{((A^2-A)+1)\cdot(((B-1)\cdot A^2+A+B)-1)})}{((A^2-A)+1)} = 0.82489$$

$$R_2-\frac{(B\cdot((A^2-A)+1)+\sqrt{((A^2-A)+1)\cdot(((B-1)\cdot A^2+A+B)-1)})}{((A^2-A)+1)} = 0.00000$$

$$R_1-\frac{(N_2\cdot((N_1{}^2-N_1)+1))}{((N_1{}^2-N_1)+1+\sqrt{N_2\cdot((N_1{}^2-N_1)+1)\cdot((N_1{}^2-N_1{}^2\cdot N_2-N_2)+N_1\cdot N_2+1)})} = 0.00000$$

$$R_1-\frac{((A^2-A)+1)}{(B\cdot((A^2-A)+1)+\sqrt{((A^2-A)+1)\cdot(((B-1)\cdot A^2+A+B)-1)})} = 0.00000$$

$$\frac{((A^2-A)+1)}{(B\cdot((A^2-A)+1)+\sqrt{((A^2-A)+1)\cdot(((B-1)\cdot A^2+A+B)-1)})}-\frac{(N_2\cdot((N_1{}^2-N_1)+1))}{((N_1{}^2-N_1)+1+\sqrt{N_2\cdot((N_1{}^2-N_1)+1)\cdot((N_1{}^2-N_1{}^2\cdot N_2-N_2)+N_1\cdot N_2+1)})} = 0.00000$$

3OBT3R1

Given.

Unit. $am := 1$

$N_1 := 1.35505 \quad N_2 := 3.63672$

$A := \dfrac{1}{N_1} \quad B := \dfrac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1 + N_1^{\,2}} \quad bf := \dfrac{N_1}{bN_1} \quad fg := \dfrac{bf}{bN_1}$

$eh := N_2 \cdot fg \quad R_1 := N_2 - eh$

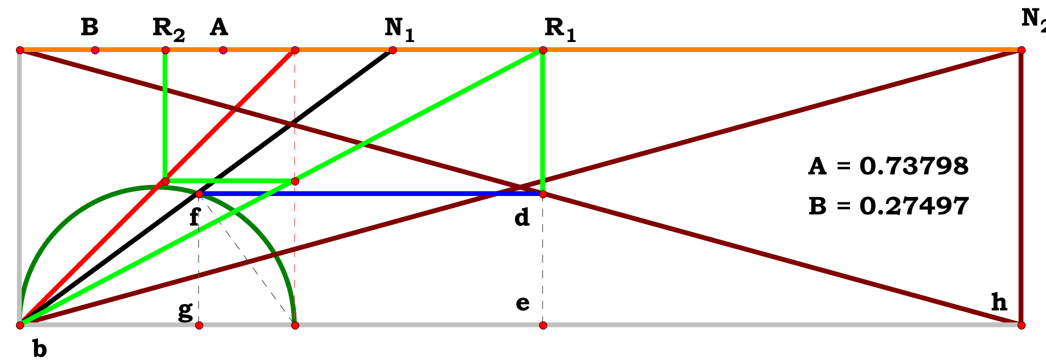
$R_2 := \dfrac{1}{R_1} \quad R_1 = 1.899182$

Definitions.

$$R_1 - \frac{N_1^{\,2} \cdot N_2 - N_1 \cdot N_2 + N_2}{1 + N_1^{\,2}} = 0$$

$$N_1 - \frac{1}{A} = 0 \qquad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{\left(A^2 - A + 1\right)}{B \cdot \left(A^2 + 1\right)} = 0 \qquad R_2 - \frac{B \cdot \left(A^2 + 1\right)}{A^2 - A + 1} = 0$$



$R_1 = 1.89918$

$ab = 1.00000$

$N_1 = 1.35505$

$N_2 = 3.63672$

$\dfrac{(N_1{}^2 \cdot N_2 - N_1 \cdot N_2) + N_2}{1 + N_1{}^2} = 1.89918$

$\dfrac{((A^2 - A) + 1)}{(B \cdot (A^2 + 1))} = 1.89918$

$R_1 - \dfrac{(N_1{}^2 \cdot N_2 - N_1 \cdot N_2) + N_2}{1 + N_1{}^2} = 0.00000$

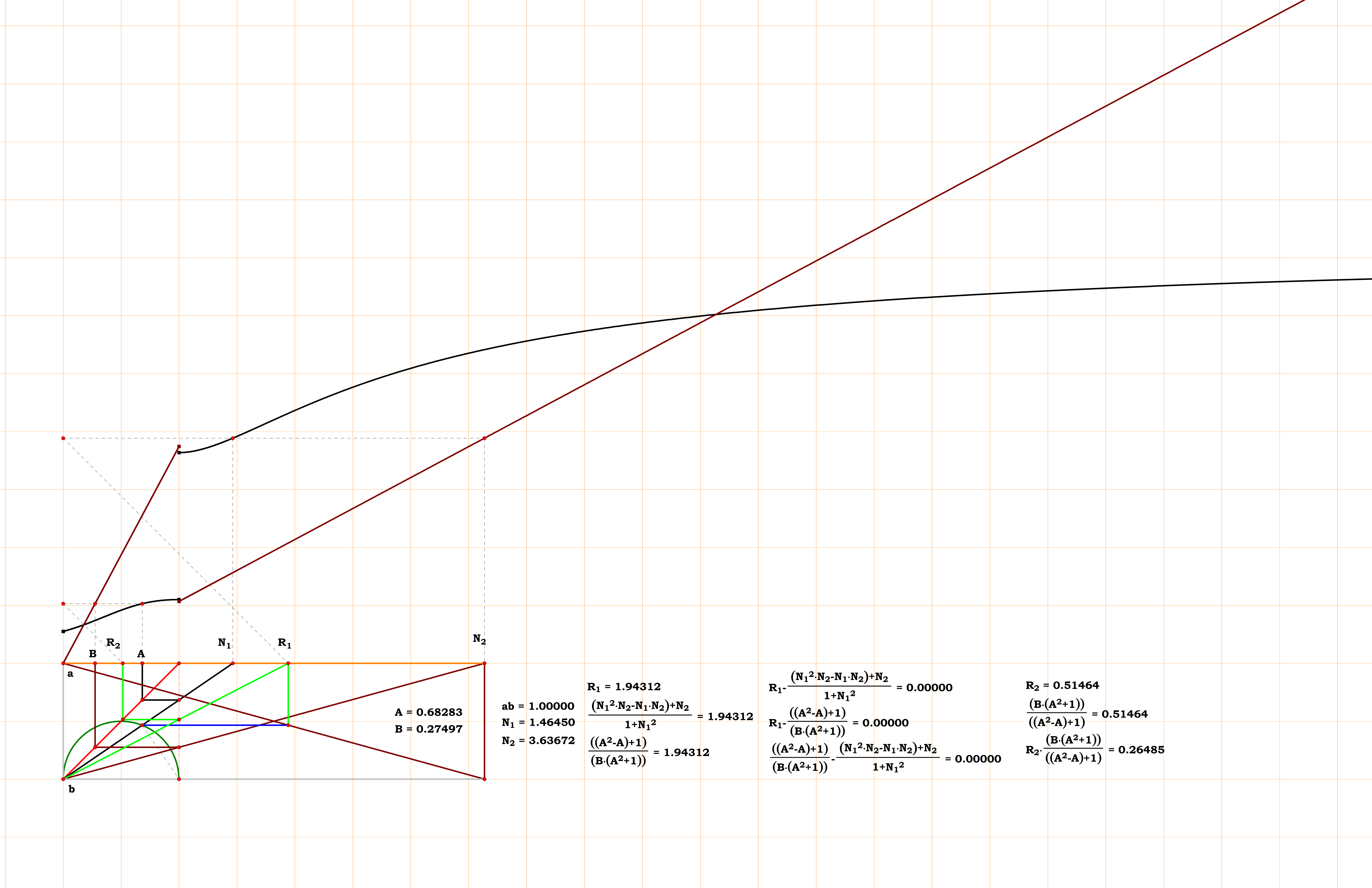
$R_1 - \dfrac{((A^2 - A) + 1)}{(B \cdot (A^2 + 1))} = 0.00000$

$\dfrac{((A^2 - A) + 1)}{(B \cdot (A^2 + 1))} - \dfrac{(N_1{}^2 \cdot N_2 - N_1 \cdot N_2) + N_2}{1 + N_1{}^2} = 0.00000$

$R_2 = 0.52654$

$\dfrac{(B \cdot (A^2 + 1))}{((A^2 - A) + 1)} = 0.52654$

$R_2 \cdot \dfrac{(B \cdot (A^2 + 1))}{((A^2 - A) + 1)} = 0.27725$


B
R_2
A
N_1
R_1
N_2
a
b
A = 0.68283
B = 0.27497
ab = 1.00000
N_1 = 1.46450
N_2 = 3.63672
R_1 = 1.94312
$\frac{(N_1^2 \cdot N_2 - N_1 \cdot N_2) + N_2}{1 + N_1^2} = 1.94312$
$\frac{((A^2 - A) + 1)}{(B \cdot (A^2 + 1))} = 1.94312$
$R_1 - \frac{(N_1^2 \cdot N_2 - N_1 \cdot N_2) + N_2}{1 + N_1^2} = 0.00000$
$R_1 - \frac{((A^2 - A) + 1)}{(B \cdot (A^2 + 1))} = 0.00000$
$\frac{((A^2 - A) + 1)}{(B \cdot (A^2 + 1))} - \frac{(N_1^2 \cdot N_2 - N_1 \cdot N_2) + N_2}{1 + N_1^2} = 0.00000$
R_2 = 0.51464
$\frac{(B \cdot (A^2 + 1))}{((A^2 - A) + 1)} = 0.51464$
$R_2 \cdot \frac{(B \cdot (A^2 + 1))}{((A^2 - A) + 1)} = 0.26485$

3OBT3R2

Given.

Unit. $ab := 1$

$N_1 := 1.78695 \quad N_2 := 2.32898$

$A := \frac{1}{N_1} \quad B := \frac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1 + N_1^2} \quad bh := \frac{N_1}{bN_1} \quad hk := \frac{bh}{bN_1}$

$ej := N_2 \cdot hk \quad be := N_2 - ej \quad am := \frac{be}{hk}$

$bm := \sqrt{1 + am^2} \quad bf := \frac{am}{bm} \quad R_1 := \frac{am \cdot bf}{bm}$

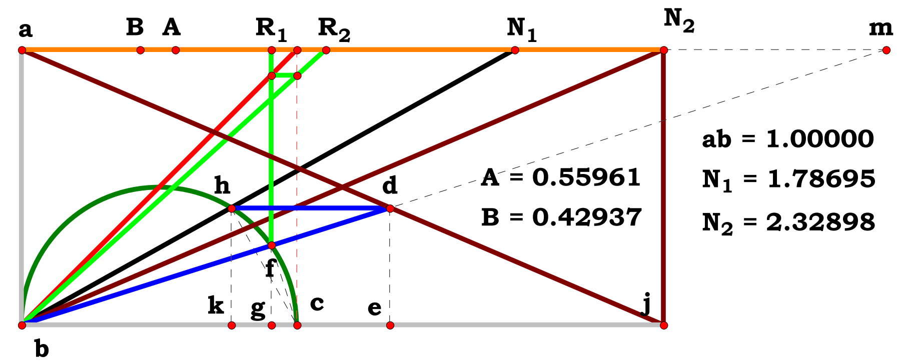
$R_2 := \frac{1}{R_1} \quad R_1 = 0.907709$

Definitions.

$$R_1 - \frac{N_1 \cdot N_2^2 \cdot (N_1 - 1) \cdot \left(N_1^2 - N_1 + 2\right) + N_2^2}{N_1 \cdot N_2^2 \cdot (N_1 - 1) \cdot \left(N_1^2 - N_1 + 2\right) + N_1^2 + N_2^2} = 0$$

$$N_1 - \frac{1}{A} = 0 \qquad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{\left(A^2 - A + 1\right)^2}{A^2 \cdot B^2 + 1 + A \cdot (A - 1) \cdot \left(A^2 - A + 2\right)} = 0 \qquad R_2 - \frac{A^2 \cdot B^2 + 1 + A \cdot (A - 1) \cdot \left(A^2 - A + 2\right)}{\left(A^2 - A + 1\right)^2} = 0$$



$R_1 = 0.90771$

$$\frac{(N_1 \cdot N_2^2 \cdot (N_1-1) \cdot ((N_1^2-N_1)+2)+N_2^2)}{(N_1 \cdot N_2^2 \cdot (N_1-1) \cdot ((N_1^2-N_1)+2)+N_1^2+N_2^2)} = 0.90771$$

$$\frac{((A^2-A)+1)^2}{(A^2 \cdot B^2+1+A \cdot (A-1) \cdot ((A^2-A)+2))} = 0.90771$$

$$R_1 - \frac{(N_1 \cdot N_2^2 \cdot (N_1-1) \cdot ((N_1^2-N_1)+2)+N_2^2)}{(N_1 \cdot N_2^2 \cdot (N_1-1) \cdot ((N_1^2-N_1)+2)+N_1^2+N_2^2)} = 0.00000$$

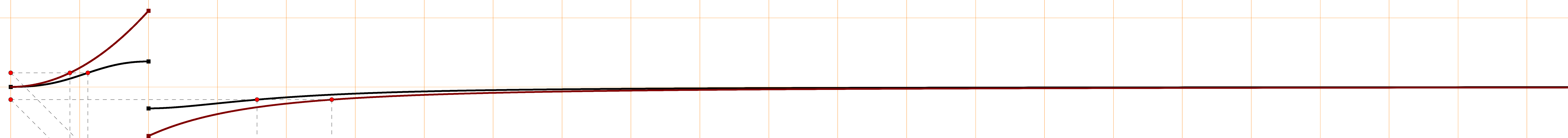
$$R_1 - \frac{((A^2-A)+1)^2}{(A^2 \cdot B^2+1+A \cdot (A-1) \cdot ((A^2-A)+2))} = 0.00000$$

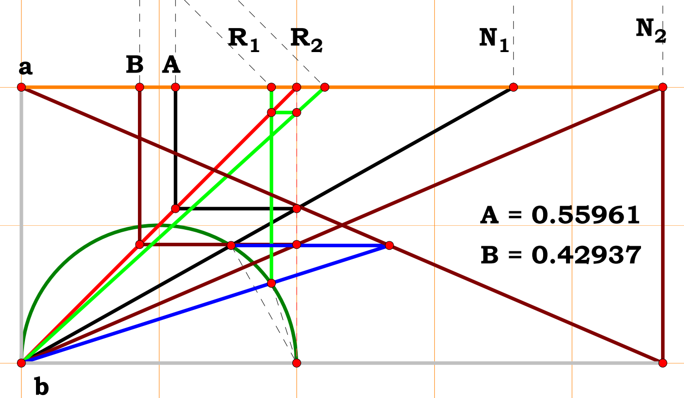
$$\frac{((A^2-A)+1)^2}{(A^2 \cdot B^2+1+A \cdot (A-1) \cdot ((A^2-A)+2))} - \frac{(N_1 \cdot N_2^2 \cdot (N_1-1) \cdot ((N_1^2-N_1)+2)+N_2^2)}{(N_1 \cdot N_2^2 \cdot (N_1-1) \cdot ((N_1^2-N_1)+2)+N_1^2+N_2^2)} = 0.00000$$

$R_2 = 1.10168$

$$\frac{(A^2 \cdot B^2+1+A \cdot (A-1) \cdot ((A^2-A)+2))}{((A^2-A)+1)^2} = 1.10168$$

$$R_2 - \frac{(A^2 \cdot B^2+1+A \cdot (A-1) \cdot ((A^2-A)+2))}{((A^2-A)+1)^2} = 0.00000$$





$R_1 = 0.90771$

$ab = 1.00000$

$N_1 = 1.78695$

$N_2 = 2.32898$

$$\frac{(N_1 \cdot N_2^2 \cdot (N_1-1) \cdot ((N_1^2-N_1)+2)+N_2^2)}{(N_1 \cdot N_2^2 \cdot (N_1-1) \cdot ((N_1^2-N_1)+2)+N_1^2+N_2^2)} = 0.90771$$

$$\frac{((A^2-A)+1)^2}{(A^2 \cdot B^2+1+A \cdot (A-1) \cdot ((A^2-A)+2))} = 0.90771$$

$$R_1 - \frac{(N_1 \cdot N_2^2 \cdot (N_1-1) \cdot ((N_1^2-N_1)+2)+N_2^2)}{(N_1 \cdot N_2^2 \cdot (N_1-1) \cdot ((N_1^2-N_1)+2)+N_1^2+N_2^2)} = 0.00000$$

$$R_1 - \frac{((A^2-A)+1)^2}{(A^2 \cdot B^2+1+A \cdot (A-1) \cdot ((A^2-A)+2))} = 0.00000$$

$$\frac{((A^2-A)+1)^2}{(A^2 \cdot B^2+1+A \cdot (A-1) \cdot ((A^2-A)+2))} - \frac{(N_1 \cdot N_2^2 \cdot (N_1-1) \cdot ((N_1^2-N_1)+2)+N_2^2)}{(N_1 \cdot N_2^2 \cdot (N_1-1) \cdot ((N_1^2-N_1)+2)+N_1^2+N_2^2)} = 0.00000$$

$R_2 = 1.10168$

$$\frac{(A^2 \cdot B^2+1+A \cdot (A-1) \cdot ((A^2-A)+2))}{((A^2-A)+1)^2} = 1.10168$$

$$R_2 - \frac{(A^2 \cdot B^2+1+A \cdot (A-1) \cdot ((A^2-A)+2))}{((A^2-A)+1)^2} = 0.00000$$

3OBT2R3

Given.

Unit. $ab := 1$

$N_1 := 2.91820 \quad N_2 := 1.17360$

$A := \frac{1}{N_1} \quad B := \frac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1+N_1^2} \quad bk := \frac{N_1}{bN_1}$

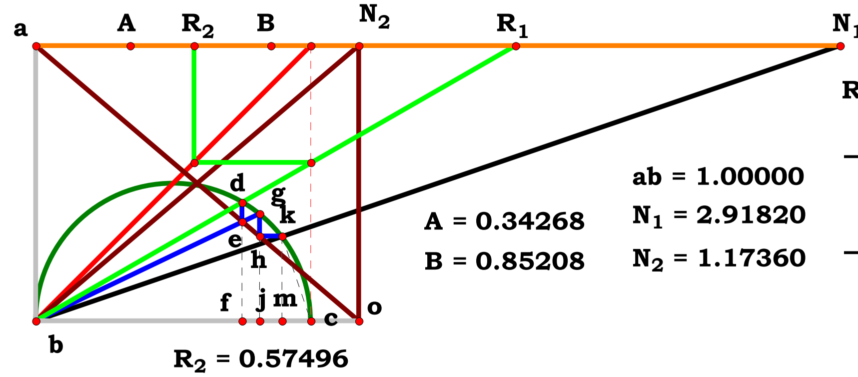
$km := \frac{bk}{bN_1} \quad jo := N_2 \cdot km$

$bj := N_2 - jo \quad gj := \sqrt{bj \cdot (1-bj)}$

$ap := \frac{bj}{gj} \quad bf := \frac{ap \cdot N_2}{ap + N_2}$

$df := \sqrt{bf \cdot (1-bf)} \quad R_1 := \frac{bf}{df}$

$R_2 := \frac{1}{R_1} \quad R_1 = 1.73926$



$R_1 = 1.73925$

$ab = 1.00000$

$N_1 = 2.91820$

$N_2 = 1.17360$

$A = 0.34268$

$B = 0.85208$

$$\frac{N_2((N_1^2-N_1)+1)}{\sqrt{N_2((N_1^2-N_1)+1)((\sqrt{N_2((N_1^2-N_1)+1)((N_1^2-N_1^2 N_2-N_2)+N_1 N_2+1)}-N_2-N_1^2 N_2-N_1)+N_1^2+N_1 N_2+1)}} = 1.73925$$

$$\frac{((A^2-A)+1)}{\sqrt{((A^2-A)+1)(\sqrt{((A^2-A)+1)((((A^2 B-A^2)+A)-1)+B)}+((A^2-A)+1)(B-1))}} = 1.73925$$

$R_2 = 0.57496$

$$\frac{\sqrt{((A^2-A)+1)(\sqrt{((A^2-A)+1)((((A^2 B-A^2)+A)-1)+B)}+((A^2-A)+1)(B-1))}}{((A^2-A)+1)} = 0.57496$$

$$R_2-\frac{\sqrt{((A^2-A)+1)(\sqrt{((A^2-A)+1)((((A^2 B-A^2)+A)-1)+B)}+((A^2-A)+1)(B-1))}}{((A^2-A)+1)} = 0.00000$$

$$R_1-\frac{N_2((N_1^2-N_1)+1)}{\sqrt{N_2((N_1^2-N_1)+1)((\sqrt{N_2((N_1^2-N_1)+1)((N_1^2-N_1^2 N_2-N_2)+N_1 N_2+1)}-N_2-N_1^2 N_2-N_1)+N_1^2+N_1 N_2+1)}} = 0.00000$$

$$R_1-\frac{((A^2-A)+1)}{\sqrt{((A^2-A)+1)(\sqrt{((A^2-A)+1)((((A^2 B-A^2)+A)-1)+B)}+((A^2-A)+1)(B-1))}} = 0.00000$$

$$\frac{((A^2-A)+1)}{\sqrt{((A^2-A)+1)(\sqrt{((A^2-A)+1)((((A^2 B-A^2)+A)-1)+B)}+((A^2-A)+1)(B-1))}}-\frac{N_2((N_1^2-N_1)+1)}{\sqrt{N_2((N_1^2-N_1)+1)((\sqrt{N_2((N_1^2-N_1)+1)((N_1^2-N_1^2 N_2-N_2)+N_1 N_2+1)}-N_2-N_1^2 N_2-N_1)+N_1^2+N_1 N_2+1)}} = 0.00000$$

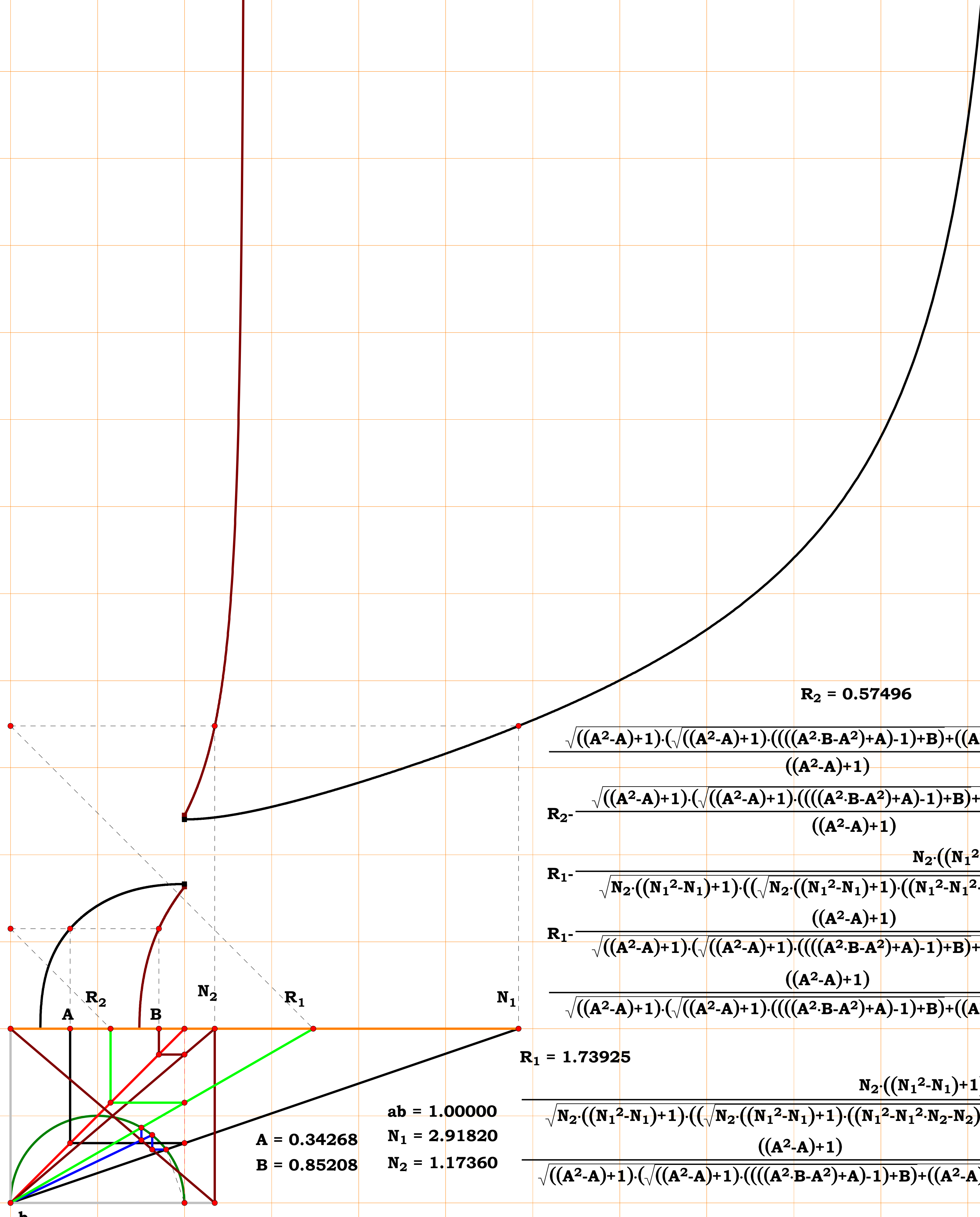
Definitions.

$$N_1-\frac{1}{A}=0 \quad \frac{N_2\cdot\left(N_1^2-N_1+1\right)}{\sqrt{\left(N_1^2-N_1+1\right)\cdot\left[\sqrt{N_2\cdot\left(N_1^2-N_1+1\right)\cdot\left(N_1^2-N_1^2\cdot N_2-N_2+N_1\cdot N_2+1\right)}-N_2-N_1^2\cdot N_2-N_1+N_1^2+N_1\cdot N_2+1\right]}} = 0$$

$$N_2-\frac{1}{B}=0$$

$$R_1-\frac{\left(A^2-A+1\right)}{\sqrt{\left(A^2-A+1\right)\cdot\left[\sqrt{\left(A^2-A+1\right)\cdot\left(B\cdot A^2-A^2+A-1+B\right)}+\left(A^2-A+1\right)\cdot(B-1)\right]}} = 0$$

$$R_2-\frac{\sqrt{\left[(B-1)\cdot\left(A^2-A+1\right)+\sqrt{\left(A^2-A+1\right)\cdot\left(A+B-A^2+A^2\cdot B-1\right)}\right]\cdot\left(A^2-A+1\right)}}{A^2-A+1} = 0$$



$R_2 = 0.57496$

$$\frac{\sqrt{((A^2-A)+1)\cdot(\sqrt{((A^2-A)+1)\cdot((((A^2\cdot B-A^2)+A)-1)+B)}+((A^2-A)+1)\cdot(B-1))}}{((A^2-A)+1)} = 0.57496$$

$$R_2-\frac{\sqrt{((A^2-A)+1)\cdot(\sqrt{((A^2-A)+1)\cdot((((A^2\cdot B-A^2)+A)-1)+B)}+((A^2-A)+1)\cdot(B-1))}}{((A^2-A)+1)} = 0.00000$$

$$R_1-\frac{N_2\cdot((N_1^2-N_1)+1)}{\sqrt{N_2\cdot((N_1^2-N_1)+1)\cdot((\sqrt{N_2\cdot((N_1^2-N_1)+1)\cdot((N_1^2-N_1^2\cdot N_2-N_2)+N_1\cdot N_2+1)}-N_2-N_1^2\cdot N_2-N_1)+N_1^2+N_1\cdot N_2+1)}} = 0.00000$$

$$R_1-\frac{((A^2-A)+1)}{\sqrt{((A^2-A)+1)\cdot(\sqrt{((A^2-A)+1)\cdot((((A^2\cdot B-A^2)+A)-1)+B)}+((A^2-A)+1)\cdot(B-1))}} = 0.00000$$

$$\frac{((A^2-A)+1)}{\sqrt{((A^2-A)+1)\cdot(\sqrt{((A^2-A)+1)\cdot((((A^2\cdot B-A^2)+A)-1)+B)}+((A^2-A)+1)\cdot(B-1))}}-\frac{N_2\cdot((N_1^2-N_1)+1)}{\sqrt{N_2\cdot((N_1^2-N_1)+1)\cdot((\sqrt{N_2\cdot((N_1^2-N_1)+1)\cdot((N_1^2-N_1^2\cdot N_2-N_2)+N_1\cdot N_2+1)}-N_2-N_1^2\cdot N_2-N_1)+N_1^2+N_1\cdot N_2+1)}} = 0.00000$$

$R_1 = 1.73925$

$A = 0.34268$

$B = 0.85208$

$ab = 1.00000$

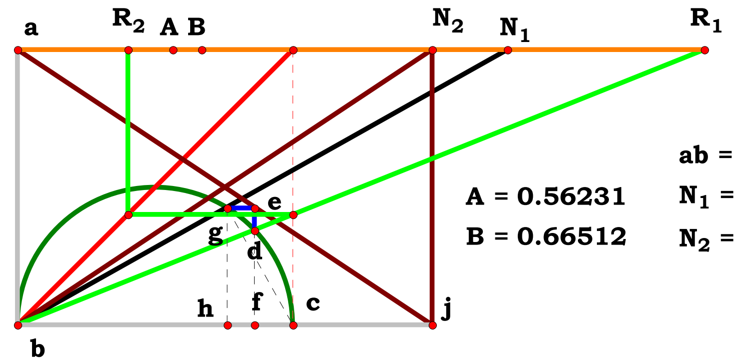
$N_1 = 2.91820$

$N_2 = 1.17360$

$$\frac{N_2\cdot((N_1^2-N_1)+1)}{\sqrt{N_2\cdot((N_1^2-N_1)+1)\cdot((\sqrt{N_2\cdot((N_1^2-N_1)+1)\cdot((N_1^2-N_1^2\cdot N_2-N_2)+N_1\cdot N_2+1)}-N_2-N_1^2\cdot N_2-N_1)+N_1^2+N_1\cdot N_2+1)}} = 1.73925$$

$$\frac{((A^2-A)+1)}{\sqrt{((A^2-A)+1)\cdot(\sqrt{((A^2-A)+1)\cdot((((A^2\cdot B-A^2)+A)-1)+B)}+((A^2-A)+1)\cdot(B-1))}} = 1.73925$$

3OBT3R4



A = 0.56231
B = 0.66512

ab = 1.00000
N_1 = 1.77838
N_2 = 1.50350

R_1 = 2.49057

$$\frac{N_2\cdot((N_1^2-N_1)+1)}{\sqrt{N_2\cdot((N_1^2-N_1)+1)\cdot((N_1^2-N_1^2\cdot N_2-N_2)+N_1\cdot N_2+1)}} = 2.49057$$

$$\frac{((A^2-A)+1)}{\sqrt{((A^2-A)+1)\cdot((((A+B)-A^2)+A^2\cdot B)-1)}} = 2.49057$$

R_2 = 0.40151

$$\frac{\sqrt{((A^2-A)+1)\cdot((((A+B)-A^2)+A^2\cdot B)-1)}}{((A^2-A)+1)} = 0.40151$$

$$R_1-\frac{N_2\cdot((N_1^2-N_1)+1)}{\sqrt{N_2\cdot((N_1^2-N_1)+1)\cdot((N_1^2-N_1^2\cdot N_2-N_2)+N_1\cdot N_2+1)}} = 0.00000$$

$$R_1-\frac{((A^2-A)+1)}{\sqrt{((A^2-A)+1)\cdot((((A+B)-A^2)+A^2\cdot B)-1)}} = 0.00000$$

$$R_2-\frac{\sqrt{((A^2-A)+1)\cdot((((A+B)-A^2)+A^2\cdot B)-1)}}{((A^2-A)+1)} = 0.00000$$

$$\frac{((A^2-A)+1)}{\sqrt{((A^2-A)+1)\cdot((((A+B)-A^2)+A^2\cdot B)-1)}}-\frac{N_2\cdot((N_1^2-N_1)+1)}{\sqrt{N_2\cdot((N_1^2-N_1)+1)\cdot((N_1^2-N_1^2\cdot N_2-N_2)+N_1\cdot N_2+1)}} = 0.00000$$

Given.

Unit. $ab := 1$

$N_1 := 1.77838 \quad N_2 := 1.50350$

$A := \frac{1}{N_1} \quad B := \frac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1+N_1^2} \quad bg := \frac{N_1}{bN_1}$

$gh := \frac{bg}{bN_1} \quad fj := N_2\cdot gh$

$bf := N_2 - fj \quad df := \sqrt{bf\cdot(1-bf)}$

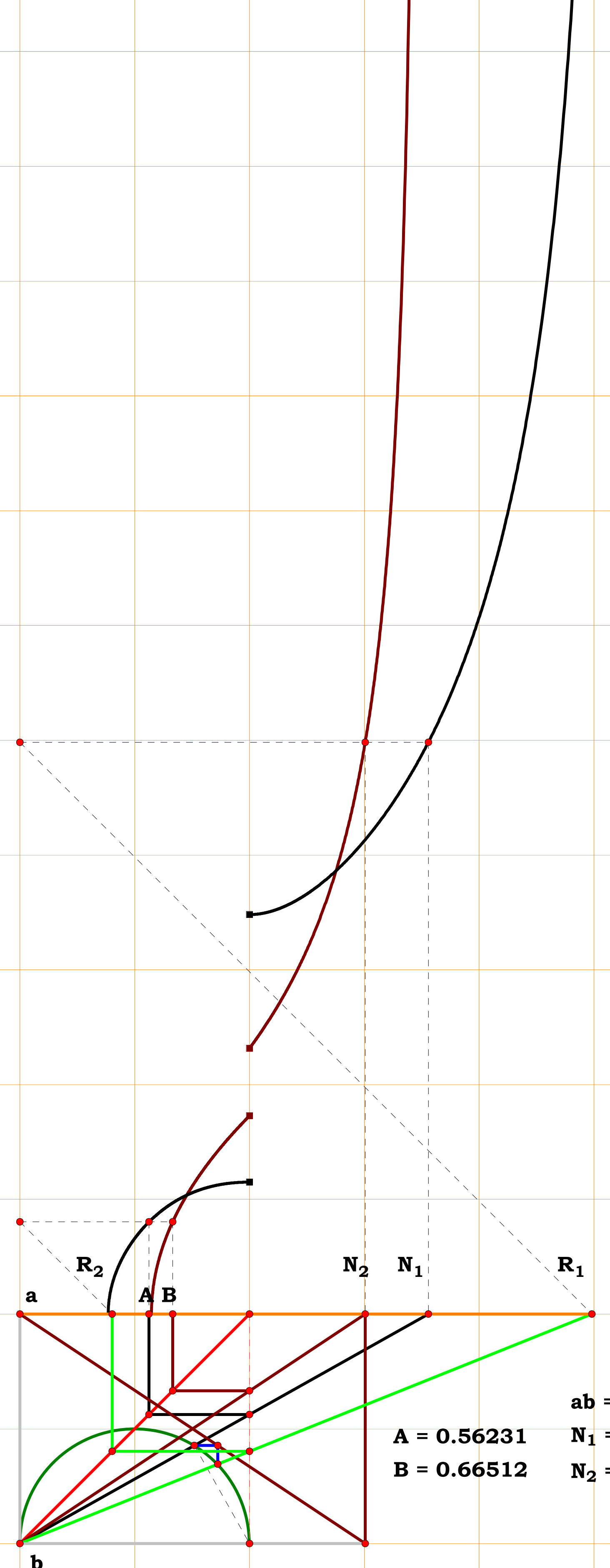
$R_1 := \frac{bf}{df} \quad R_2 := \frac{1}{R_1} \quad R_1 = 2.490571$

Definitions.

$$R_1-\frac{N_2\cdot\left(N_1^2-N_1+1\right)}{\sqrt{N_2\cdot\left(N_1^2-N_1+1\right)\cdot\left(N_1^2-N_1^2\cdot N_2-N_2+N_1\cdot N_2+1\right)}} = 0$$

$N_1-\frac{1}{A} = 0 \quad N_2-\frac{1}{B} = 0$

$$R_1-\frac{\left(A^2-A+1\right)}{\sqrt{\left[\left(A^2-A+1\right)\cdot\left(A+B-A^2+A^2\cdot B-1\right)\right]}} = 0 \qquad R_2-\frac{\sqrt{\left(A^2-A+1\right)\cdot\left(A+B-A^2+A^2\cdot B-1\right)}}{A^2-A+1} = 0$$



$$A = 0.56231$$
$$B = 0.66512$$

$$ab = 1.00000$$
$$N_1 = 1.77838$$
$$N_2 = 1.50350$$

$$R_2 = 0.40151$$

$$\frac{\sqrt{((A^2-A)+1)\cdot((((A+B)-A^2)+A^2\cdot B)-1)}}{((A^2-A)+1)} = 0.40151$$

$$R_2-\frac{\sqrt{((A^2-A)+1)\cdot((((A+B)-A^2)+A^2\cdot B)-1)}}{((A^2-A)+1)} = 0.00000$$

$$R_1 = 2.49057$$

$$\frac{N_2\cdot((N_1{}^2-N_1)+1)}{\sqrt{N_2\cdot((N_1{}^2-N_1)+1)\cdot((N_1{}^2-N_1{}^2\cdot N_2-N_2)+N_1\cdot N_2+1)}} = 2.49057$$

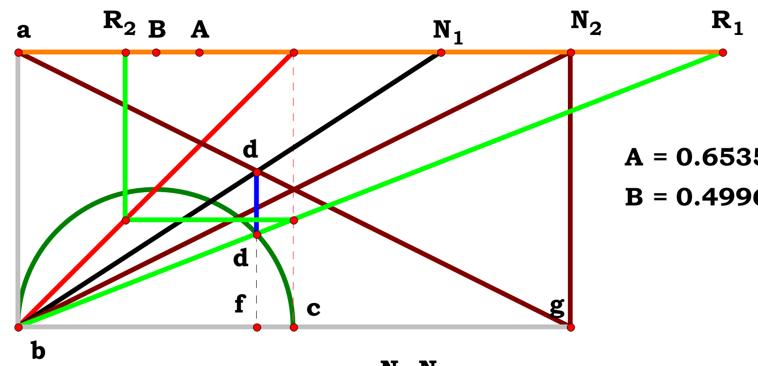
$$\frac{((A^2-A)+1)}{\sqrt{((A^2-A)+1)\cdot((((A+B)-A^2)+A^2\cdot B)-1)}} = 2.49057$$

$$R_1-\frac{N_2\cdot((N_1{}^2-N_1)+1)}{\sqrt{N_2\cdot((N_1{}^2-N_1)+1)\cdot((N_1{}^2-N_1{}^2\cdot N_2-N_2)+N_1\cdot N_2+1)}} = 0.00000$$

$$R_1-\frac{((A^2-A)+1)}{\sqrt{((A^2-A)+1)\cdot((((A+B)-A^2)+A^2\cdot B)-1)}} = 0.00000$$

$$\frac{((A^2-A)+1)}{\sqrt{((A^2-A)+1)\cdot((((A+B)-A^2)+A^2\cdot B)-1)}}-\frac{N_2\cdot((N_1{}^2-N_1)+1)}{\sqrt{N_2\cdot((N_1{}^2-N_1)+1)\cdot((N_1{}^2-N_1{}^2\cdot N_2-N_2)+N_1\cdot N_2+1)}} = 0.00000$$

3OBT3R5



A = 0.65358
B = 0.49961

ab = 1.00000
N_1 = 1.53003
N_2 = 2.00158

R_1 = 2.55497

$$\frac{N_1 \cdot N_2}{\sqrt{N_1 \cdot N_2 \cdot ((N_1+N_2)-N_1 \cdot N_2)}} = 2.55497$$

$$\frac{1}{\sqrt{(A+B)-1}} = 2.55497$$

R_2 = 0.39139

$\sqrt{(A+B)-1}$ = 0.39139

$R_2-\sqrt{(A+B)-1}$ = 0.00000

$$R_1-\frac{N_1 \cdot N_2}{\sqrt{N_1 \cdot N_2 \cdot ((N_1+N_2)-N_1 \cdot N_2)}} = 0.00000$$

$$R_1-\frac{1}{\sqrt{(A+B)-1}} = 0.00000$$

$$\frac{1}{\sqrt{(A+B)-1}}-\frac{N_1 \cdot N_2}{\sqrt{N_1 \cdot N_2 \cdot ((N_1+N_2)-N_1 \cdot N_2)}} = 0.00000$$

Given.

Unit. $ab := 1$

$N_1 := 1.53003 \quad N_2 := 2.00158$

$$A := \frac{1}{N_1} \quad B := \frac{1}{N_2}$$

Descriptions.

$$bf := \frac{N_1 \cdot N_2}{N_1 + N_2} \quad df := \sqrt{bf \cdot (1 - bf)}$$

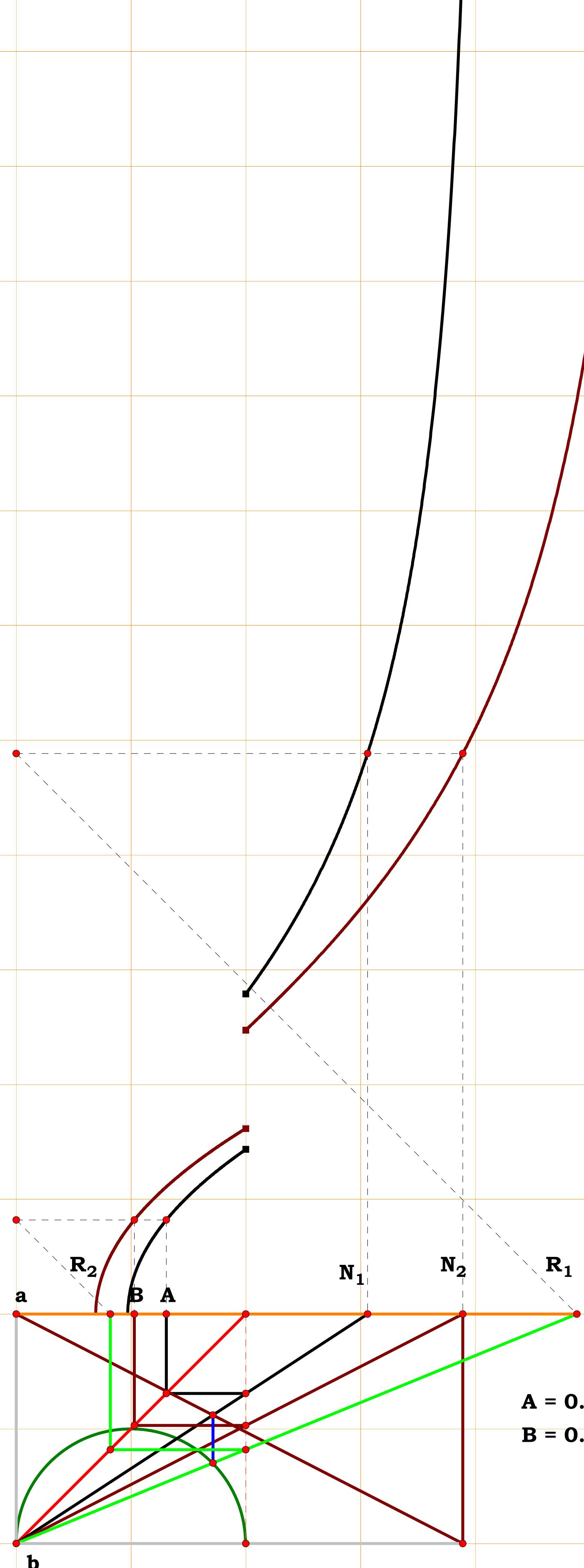
$$R_1 := \frac{bf}{df} \quad R_2 := \frac{1}{R_1} \quad R_1 = 2.554987$$

Definitions.

$$R_1 - \frac{N_1 \cdot N_2}{\sqrt{N_1 \cdot N_2 \cdot (N_1 + N_2 - N_1 \cdot N_2)}} = 0$$

$$N_1 - \frac{1}{A} = 0 \quad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{1}{\sqrt{(A + B - 1)}} = 0 \quad R_2 - \sqrt{(A + B - 1)} = 0$$



$A = 0.65358$

$B = 0.51412$

$ab = 1.00000$

$N_1 = 1.53003$

$N_2 = 1.94507$

$R_1 = 2.44190$

$$\frac{N_1 \cdot N_2}{\sqrt{N_1 \cdot N_2 \cdot ((N_1 + N_2) - N_1 \cdot N_2)}} = 2.44190$$

$$\frac{1}{\sqrt{(A+B)-1}} = 2.44190$$

$$R_1 - \frac{N_1 \cdot N_2}{\sqrt{N_1 \cdot N_2 \cdot ((N_1 + N_2) - N_1 \cdot N_2)}} = 0.00000$$

$$R_1 - \frac{1}{\sqrt{(A+B)-1}} = 0.00000$$

$$\frac{1}{\sqrt{(A+B)-1}} - \frac{N_1 \cdot N_2}{\sqrt{N_1 \cdot N_2 \cdot ((N_1 + N_2) - N_1 \cdot N_2)}} = 0.00000$$

$R_2 = 0.40952$

$\sqrt{(A+B)-1} = 0.40952$

$R_2 - \sqrt{(A+B)-1} = 0.00000$

3OBT3R6

Given.

Unit. $ab := 1$

$N_1 := 1.64346 \quad N_2 := 2.53839$

$A := \dfrac{1}{N_1} \quad B := \dfrac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1 + N_1^{\,2}} \quad bf := \dfrac{N_1}{bN_1} \quad fh := \dfrac{bf}{bN_1}$

$eh := N_2 \cdot fh \quad be := N_2 - eh \quad R_1 := \dfrac{be}{fh}$

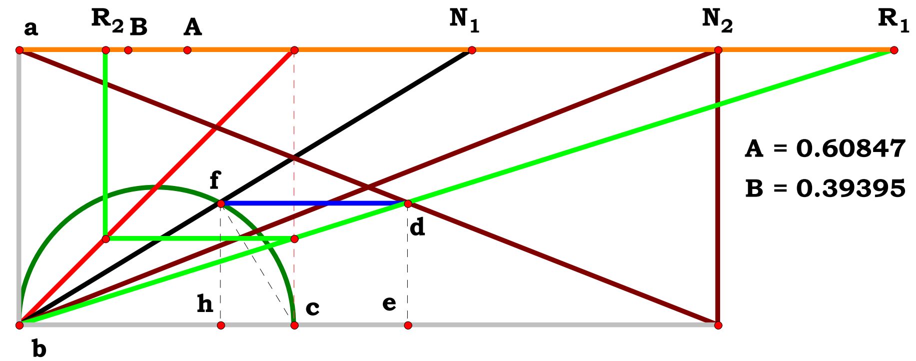
$R_2 := \dfrac{1}{R_1} \quad R_1 = 3.177893$

Definitions.

$$R_1 - \frac{N_2 \cdot \left(N_1^{\,2} - N_1 + 1\right)}{N_1} = 0$$

$$N_1 - \frac{1}{A} = 0 \quad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{A^2 - A + 1}{A \cdot B} = 0 \qquad R_2 - \frac{A \cdot B}{A^2 - A + 1} = 0$$



A = 0.60847
B = 0.39395

ab = 1.00000
N_1 = 1.64346
N_2 = 2.53839

R_1 = 3.17790

$$\frac{N_2 \cdot ((N_1^2 - N_1) + 1)}{N_1} = 3.17790$$

$$\frac{((A^2 - A) + 1)}{(A \cdot B)} = 3.17790$$

$$R_1 - \frac{N_2 \cdot ((N_1^2 - N_1) + 1)}{N_1} = 0.00000$$

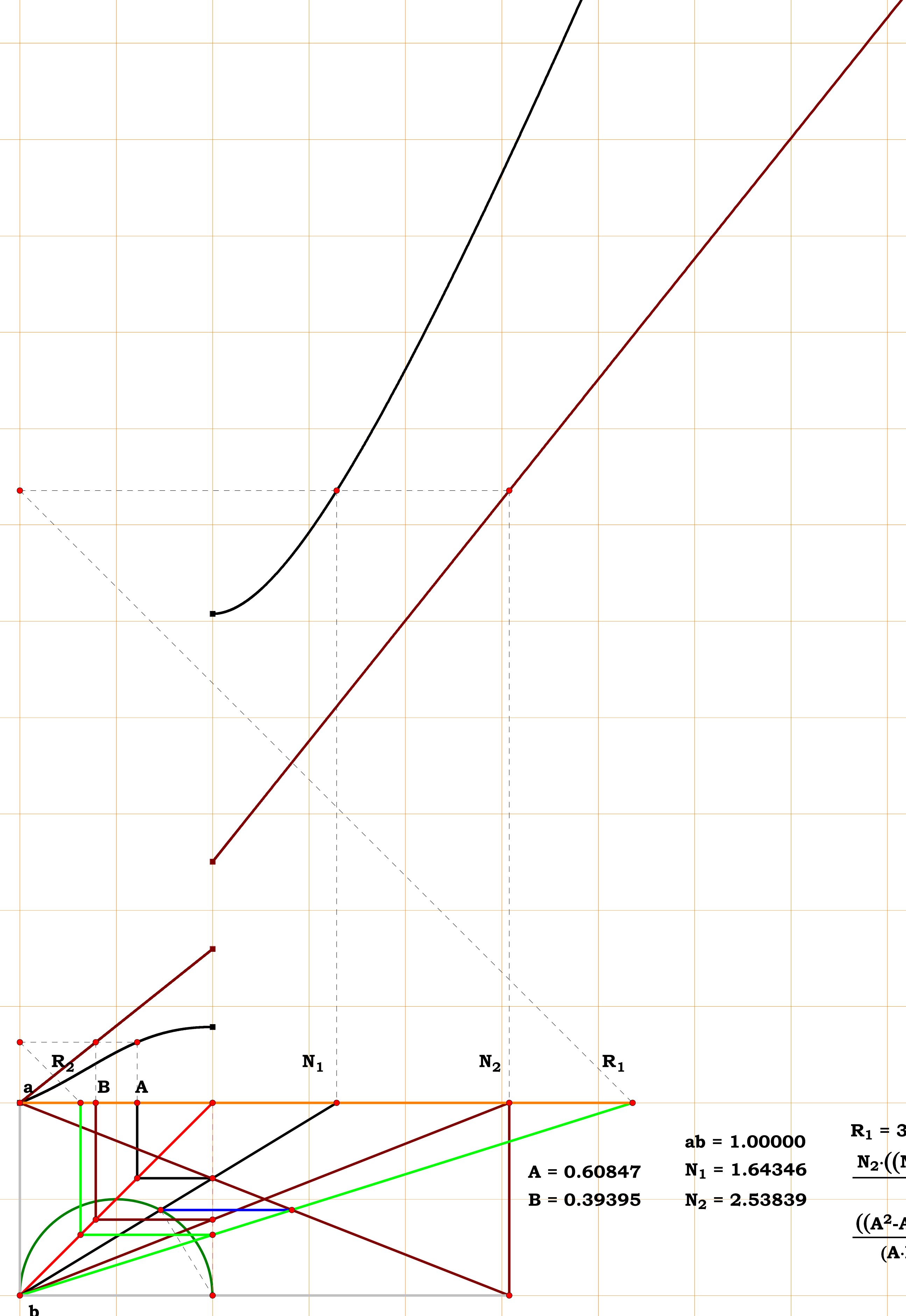
$$R_1 - \frac{((A^2 - A) + 1)}{(A \cdot B)} = 0.00000$$

$$\frac{((A^2 - A) + 1)}{(A \cdot B)} - R_1 = 0.00000$$

R_2 = 0.31467

$$\frac{(A \cdot B)}{((A^2 - A) + 1)} = 0.31467$$

$$R_2 - \frac{(A \cdot B)}{((A^2 - A) + 1)} = 0.00000$$



$A = 0.60847$

$B = 0.39395$

$ab = 1.00000$

$N_1 = 1.64346$

$N_2 = 2.53839$

$R_1 = 3.17790$

$$\frac{N_2 \cdot ((N_1{}^2 - N_1) + 1)}{N_1} = 3.17790$$

$$\frac{((A^2 - A) + 1)}{(A \cdot B)} = 3.17790$$

$$R_1 - \frac{N_2 \cdot ((N_1{}^2 - N_1) + 1)}{N_1} = 0.00000$$

$$R_1 - \frac{((A^2 - A) + 1)}{(A \cdot B)} = 0.00000$$

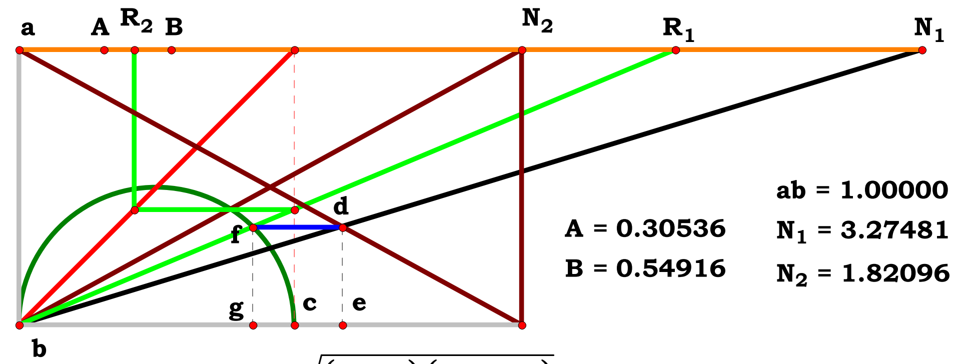
$$\frac{((A^2 - A) + 1)}{(A \cdot B)} - R_1 = 0.00000$$

$R_2 = 0.31467$

$$\frac{(A \cdot B)}{((A^2 - A) + 1)} = 0.31467$$

$$R_2 - \frac{(A \cdot B)}{((A^2 - A) + 1)} = 0.00000$$

3OBT3R7



A = 0.30536
B = 0.54916

ab = 1.00000
N_1 = 3.27481
N_2 = 1.82096

R_1 = 2.37786

$$\frac{N_1+N_2+\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_2} = 2.37786$$

$$\frac{(A+B+\sqrt{(2\cdot A\cdot B-3\cdot A^2)+B^2})}{(2\cdot A)} = 2.37786$$

$$R_1-\frac{N_1+N_2+\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_2} = 0.00000$$

$$R_1-\frac{(A+B+\sqrt{(2\cdot A\cdot B-3\cdot A^2)+B^2})}{(2\cdot A)} = 0.00000$$

$$\frac{(A+B+\sqrt{(2\cdot A\cdot B-3\cdot A^2)+B^2})}{(2\cdot A)}-\frac{N_1+N_2+\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_2} = 0.00000$$

R_2 = 0.42055

$$\frac{(2\cdot A)}{(A+B+\sqrt{(2\cdot A\cdot B-3\cdot A^2)+B^2})} = 0.42055$$

$$R_2-\frac{(2\cdot A)}{(A+B+\sqrt{(2\cdot A\cdot B-3\cdot A^2)+B^2})} = 0.00000$$

Given.

Unit. $ab := 1$

$N_1 := 3.27481 \quad N_2 := 1.82096$

$$A := \frac{1}{N_1} \quad B := \frac{1}{N_2}$$

Descriptions.

$$be := \frac{N_2\cdot N_1}{N_1+N_2} \quad de := \frac{be}{N_1} \quad eg := \frac{1}{2}-\sqrt{\left(\frac{1}{2}\right)^2-de^2}$$

$$bg := 1-eg \quad R_1 := \frac{bg}{de}$$

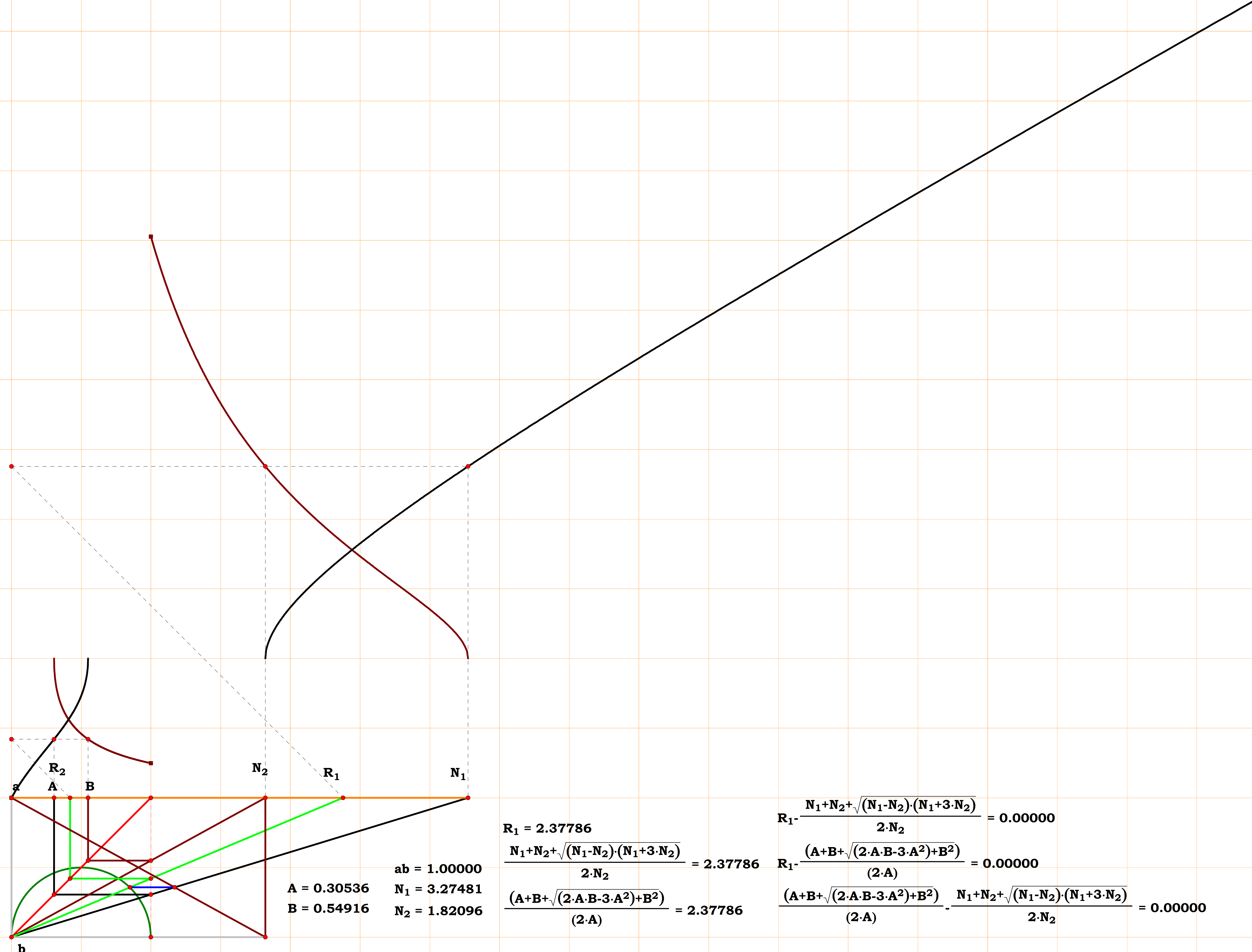
$$R_2 := \frac{1}{R_1} \quad R_1 = 2.377849$$

Definitions.

$$R_1-\frac{\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}+(N_1+N_2)}{2\cdot N_2} = 0$$

$$N_1-\frac{1}{A} = 0 \quad N_2-\frac{1}{B} = 0$$

$$R_1-\frac{A+B+\sqrt{2\cdot A\cdot B-3\cdot A^2+B^2}}{2\cdot A} = 0 \quad R_2-\frac{2\cdot A}{A+B+\sqrt{2\cdot A\cdot B-3\cdot A^2+B^2}} = 0$$



$A = 0.30536$

$B = 0.54916$

$ab = 1.00000$

$N_1 = 3.27481$

$N_2 = 1.82096$

$R_1 = 2.37786$

$$\frac{N_1+N_2+\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_2} = 2.37786$$

$$\frac{(A+B+\sqrt{(2\cdot A\cdot B-3\cdot A^2)+B^2})}{(2\cdot A)} = 2.37786$$

$$R_1-\frac{N_1+N_2+\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_2} = 0.00000$$

$$R_1-\frac{(A+B+\sqrt{(2\cdot A\cdot B-3\cdot A^2)+B^2})}{(2\cdot A)} = 0.00000$$

$$\frac{(A+B+\sqrt{(2\cdot A\cdot B-3\cdot A^2)+B^2})}{(2\cdot A)}-\frac{N_1+N_2+\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_2} = 0.00000$$

$R_2 = 0.42055$

$$\frac{(2\cdot A)}{(A+B+\sqrt{(2\cdot A\cdot B-3\cdot A^2)+B^2})} = 0.42055$$

$$R_2-\frac{(2\cdot A)}{(A+B+\sqrt{(2\cdot A\cdot B-3\cdot A^2)+B^2})} = 0.00000$$

3OBT3R8

Given.

Unit. $ab := 1$

$N_1 := 1.77511 \quad N_2 := 1.15845$

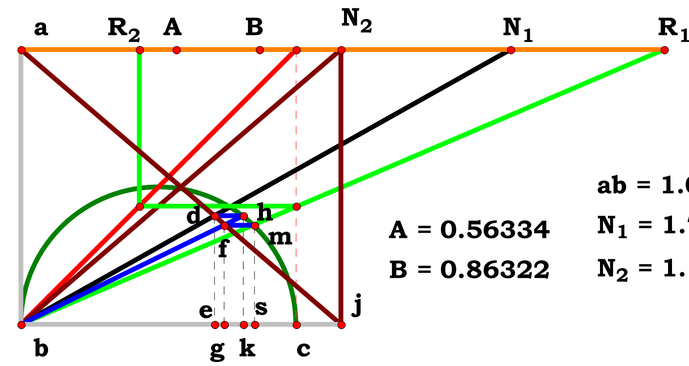
$A := \dfrac{1}{N_1} \quad B := \dfrac{1}{N_2}$

Descriptions.

$hk := \dfrac{N_2}{N_1 + N_2} \quad bk := \dfrac{1}{2} + \sqrt{\left(\dfrac{1}{2}\right)^2 - hk^2}$

$ap := \dfrac{bk}{hk} \quad ms := \dfrac{N_2}{ap + N_2} \quad bs := \dfrac{1}{2} + \sqrt{\left(\dfrac{1}{2}\right)^2 - ms^2}$

$R_1 := \dfrac{bs}{ms} \quad R_2 := \dfrac{1}{R_1} \quad R_1 = 2.33514$



$A = 0.56334$

$B = 0.86322$

$ab = 1.00000$

$N_1 = 1.77511$

$N_2 = 1.15845$

$R_1 = 2.33513$

$\dfrac{\sqrt{2}\cdot(N_1+N_2)\cdot(x+y)}{4\cdot N_2^2\cdot\sqrt{(N_1+N_2)^3}} = 2.33513$

$\dfrac{\sqrt{2}\cdot(w+z)}{4\cdot A\cdot\sqrt{(A+B)}} = 2.33513$

$R_1 - \dfrac{\sqrt{2}\cdot(N_1+N_2)\cdot(x+y)}{4\cdot N_2^2\cdot\sqrt{(N_1+N_2)^3}} = 0.00000$

$R_1 - \dfrac{\sqrt{2}\cdot(w+z)}{4\cdot A\cdot\sqrt{(A+B)}} = 0.00000$

$\dfrac{\sqrt{2}\cdot(w+z)}{4\cdot A\cdot\sqrt{(A+B)}} - \dfrac{\sqrt{2}\cdot(N_1+N_2)\cdot(x+y)}{4\cdot N_2^2\cdot\sqrt{(N_1+N_2)^3}} = 0.00000$

$R_2 = 0.42824$

$\dfrac{4\cdot A\cdot\sqrt{(A+B)}}{\sqrt{2}\cdot(w+z)} = 0.42824$

$R_2 - \dfrac{4\cdot A\cdot\sqrt{(A+B)}}{\sqrt{2}\cdot(w+z)} = 0.00000$

$x - \sqrt{(N_1+N_2)\cdot((N_1^2-N_2^2)+2\cdot N_2\cdot((N_2^2-3\cdot N_2^3)+N_1\cdot N_2+N_1))+((N_1+N_2)\cdot\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}\cdot(2\cdot N_2^2+N_2+N_1))} = 0.00000$

$y - \sqrt{(N_1+N_2)\cdot((N_1^2-N_2^2)+2\cdot N_2\cdot(N_2^2+N_1)\cdot(N_2+1))+((N_1+N_2)\cdot\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}\cdot(2\cdot N_2^2+N_2+N_1))} = 0.00000$

$w - \sqrt{(A+B)\cdot(((B^3+A\cdot B^2+2\cdot A\cdot B)\cdot\sqrt{(2\cdot A\cdot B-3\cdot A^2)+B^2})+(2\cdot A\cdot(B^2+A\cdot B+A)+B^2\cdot((2\cdot A\cdot B-A^2)+B^2)))} = 0.00000$

$z - \sqrt{(A+B)\cdot(((B^3+A\cdot B^2+2\cdot A\cdot B)\cdot\sqrt{(2\cdot A\cdot B-3\cdot A^2)+B^2})+(2\cdot A\cdot((B^2+A\cdot B)-3\cdot A)+B^2\cdot((2\cdot A\cdot B-A^2)+B^2)))} = 0.00000$

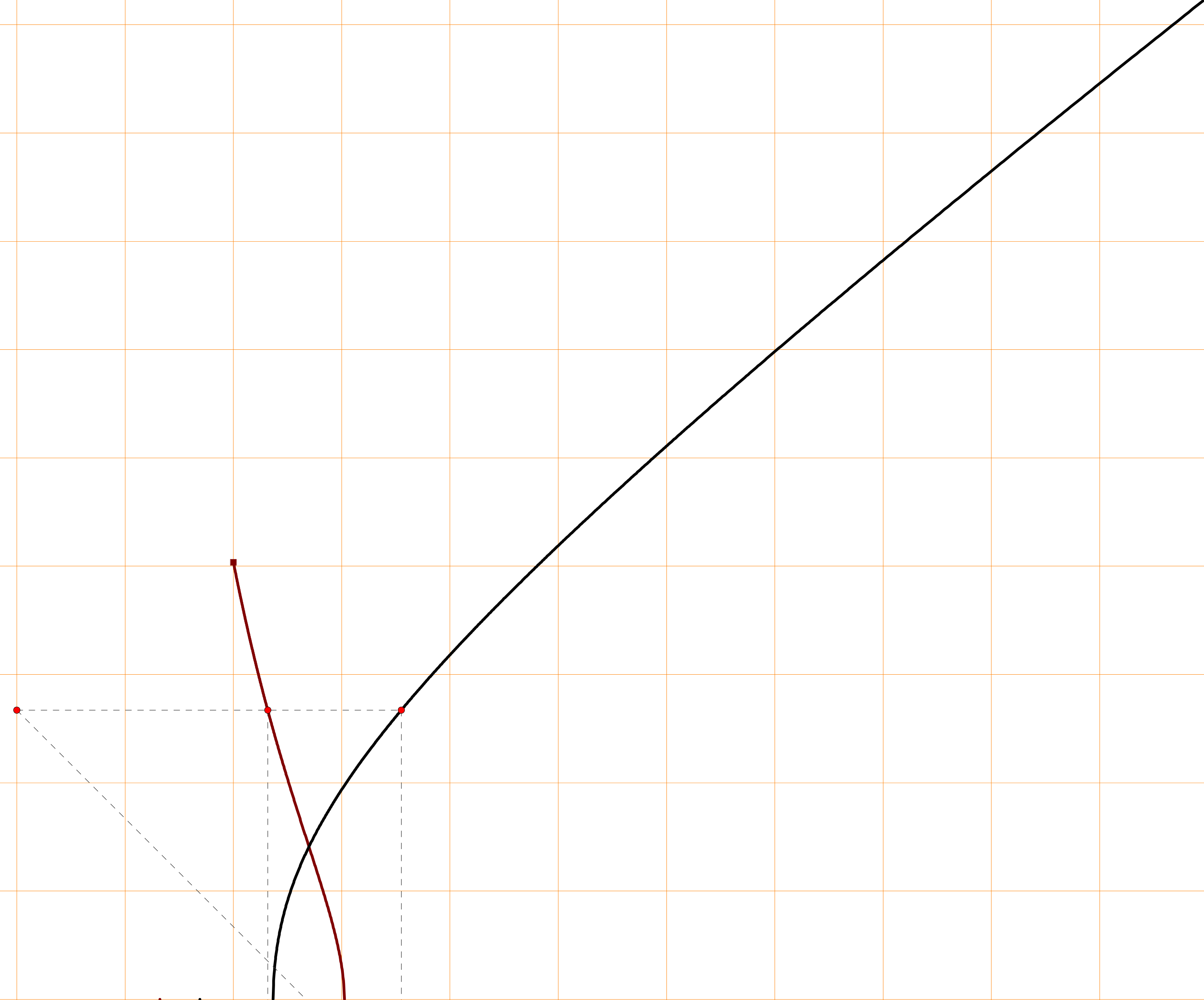
Definitions.

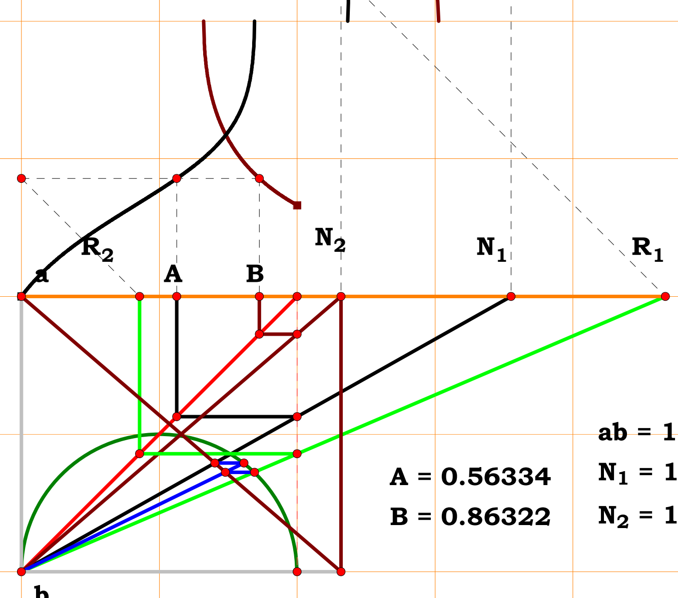
$$R_1 - \frac{\sqrt{2}\cdot(N_1+N_2)\cdot\left[\sqrt{(N_1+N_2)\cdot\left[N_1^2-N_2^2+2\cdot N_2\cdot(N_2^2+N_1)\cdot(N_2+1)\right]+(N_1+N_2)\cdot\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}\cdot(2\cdot N_2^2+N_2+N_1)} \ldots + \sqrt{(N_1+N_2)\cdot\left[N_1^2-N_2^2+2\cdot N_2\cdot(N_2^2-3\cdot N_2^3+N_1\cdot N_2+N_1)\right]+(N_1+N_2)\cdot\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}\cdot(2\cdot N_2^2+N_2+N_1)}\right]}{4\cdot N_2^2\cdot\sqrt{(N_1+N_2)^3}} = 0$$

$N_1 - \dfrac{1}{A} = 0 \qquad N_2 - \dfrac{1}{B} = 0$

$$R_1 - \frac{\sqrt{2}\cdot\left[\sqrt{(A+B)\cdot\left[(B^3+A\cdot B^2+2\cdot A\cdot B)\cdot\sqrt{2\cdot A\cdot B-3\cdot A^2+B^2}+\left[2\cdot A\cdot(B^2+A\cdot B+A)+B^2\cdot(2\cdot A\cdot B-A^2+B^2)\right]\right]} \ldots + \sqrt{(A+B)\cdot\left[(B^3+A\cdot B^2+2\cdot A\cdot B)\cdot\sqrt{2\cdot A\cdot B-3\cdot A^2+B^2}+\left[2\cdot A\cdot(B^2+A\cdot B-3\cdot A)+B^2\cdot(2\cdot A\cdot B-A^2+B^2)\right]\right]}\right]}{4\cdot\sqrt{(A+B)}\cdot A} = 0$$

$$R_2 - \frac{4\cdot\sqrt{(A+B)}\cdot A}{\sqrt{2}\cdot\left[\sqrt{(A+B)\cdot\left[(B^3+A\cdot B^2+2\cdot A\cdot B)\cdot\sqrt{2\cdot A\cdot B-3\cdot A^2+B^2}+\left[2\cdot A\cdot(B^2+A\cdot B+A)+B^2\cdot(2\cdot A\cdot B-A^2+B^2)\right]\right]} \ldots + \sqrt{(A+B)\cdot\left[(B^3+A\cdot B^2+2\cdot A\cdot B)\cdot\sqrt{2\cdot A\cdot B-3\cdot A^2+B^2}+\left[2\cdot A\cdot(B^2+A\cdot B-3\cdot A)+B^2\cdot(2\cdot A\cdot B-A^2+B^2)\right]\right]}\right]} = 0$$





$$x-\sqrt{(N_1+N_2)\cdot\left((N_1^2-N_2^2)+2\cdot N_2\cdot\left((N_2^2-3\cdot N_2^3)+N_1\cdot N_2+N_1\right)\right)+\left((N_1+N_2)\cdot\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}\cdot(2\cdot N_2^2+N_2+N_1)\right)} = 0.00000$$

$$y-\sqrt{(N_1+N_2)\cdot\left((N_1^2-N_2^2)+2\cdot N_2\cdot(N_2^2+N_1)\cdot(N_2+1)\right)+\left((N_1+N_2)\cdot\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}\cdot(2\cdot N_2^2+N_2+N_1)\right)} = 0.00000$$

$$w-\sqrt{(A+B)\cdot\left(\left((B^3+A\cdot B^2+2\cdot A\cdot B)\cdot\sqrt{(2\cdot A\cdot B-3\cdot A^2)+B^2}\right)+\left(2\cdot A\cdot(B^2+A\cdot B+A)+B^2\cdot\left((2\cdot A\cdot B-A^2)+B^2\right)\right)\right)} = 0.00000$$

$$z-\sqrt{(A+B)\cdot\left(\left((B^3+A\cdot B^2+2\cdot A\cdot B)\cdot\sqrt{(2\cdot A\cdot B-3\cdot A^2)+B^2}\right)+\left(2\cdot A\cdot\left((B^2+A\cdot B)-3\cdot A\right)+B^2\cdot\left((2\cdot A\cdot B-A^2)+B^2\right)\right)\right)} = 0.00000$$

$A = 0.56334$

$B = 0.86322$

$ab = 1.00000$

$N_1 = 1.77511$

$N_2 = 1.15845$

$R_1 = 2.33513$

$$\frac{\sqrt{2}\cdot(N_1+N_2)\cdot(x+y)}{4\cdot N_2^2\cdot\sqrt{(N_1+N_2)^3}} = 2.33513$$

$$\frac{\sqrt{2}\cdot(w+z)}{4\cdot A\cdot\sqrt{(A+B)}} = 2.33513$$

$$R_1-\frac{\sqrt{2}\cdot(N_1+N_2)\cdot(x+y)}{4\cdot N_2^2\cdot\sqrt{(N_1+N_2)^3}} = 0.00000$$

$$R_1-\frac{\sqrt{2}\cdot(w+z)}{4\cdot A\cdot\sqrt{(A+B)}} = 0.00000$$

$$\frac{\sqrt{2}\cdot(w+z)}{4\cdot A\cdot\sqrt{(A+B)}}-\frac{\sqrt{2}\cdot(N_1+N_2)\cdot(x+y)}{4\cdot N_2^2\cdot\sqrt{(N_1+N_2)^3}} = 0.00000$$

$R_2 = 0.42824$

$$\frac{4\cdot A\cdot\sqrt{(A+B)}}{\sqrt{2}\cdot(w+z)} = 0.42824$$

$$R_2-\frac{4\cdot A\cdot\sqrt{(A+B)}}{\sqrt{2}\cdot(w+z)} = 0.00000$$

3OBT3R9

Given.

Unit. $ab := 1$

$N_1 := 3.20588 \quad N_2 := 1.80293$

$A := \frac{1}{N_1} \quad B := \frac{1}{N_2}$

Descriptions.

$bh := \frac{N_1 \cdot N_2}{N_1 + N_2} \qquad gh := \frac{bh}{N_1}$

$ef := \sqrt{\left(\frac{1}{2}\right)^2 - gh^2} \qquad be := \frac{1}{2} - ef$

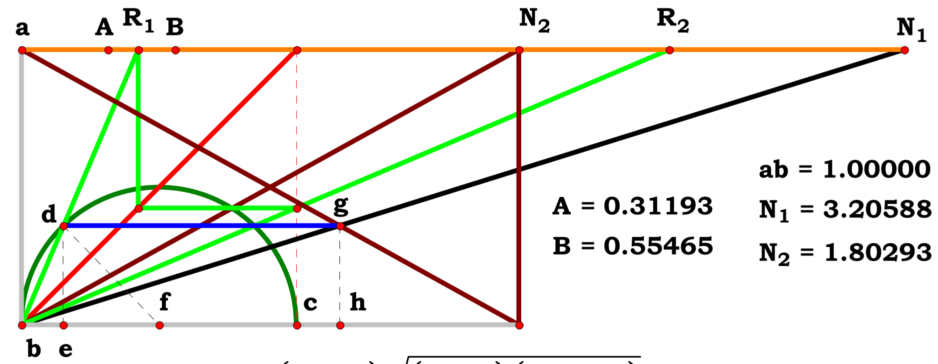
$R_1 := \frac{be}{gh} \qquad R_2 := \frac{1}{R_1} \qquad R_1 = 0.424954$

Definitions.

$$R_1 - \frac{N_1 + N_2 - \sqrt{(N_1 - N_2) \cdot (N_1 + 3 \cdot N_2)}}{2 \cdot N_2} = 0$$

$N_1 - \frac{1}{A} = 0 \qquad N_2 - \frac{1}{B} = 0$

$$R_1 - \frac{A + B - \sqrt{(B - A) \cdot (3 \cdot A + B)}}{2 \cdot A} = 0 \qquad R_2 - \frac{2 \cdot A}{A + B - \sqrt{-(A - B) \cdot (3 \cdot A + B)}} = 0$$



$A = 0.31193$

$B = 0.55465$

$ab = 1.00000$

$N_1 = 3.20588$

$N_2 = 1.80293$

$R_1 = 0.42495$

$\frac{(N_1+N_2)-\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_2} = 0.42495$

$\frac{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot A)} = 0.42495$

$R_1-\frac{(N_1+N_2)-\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_2} = 0.00000$

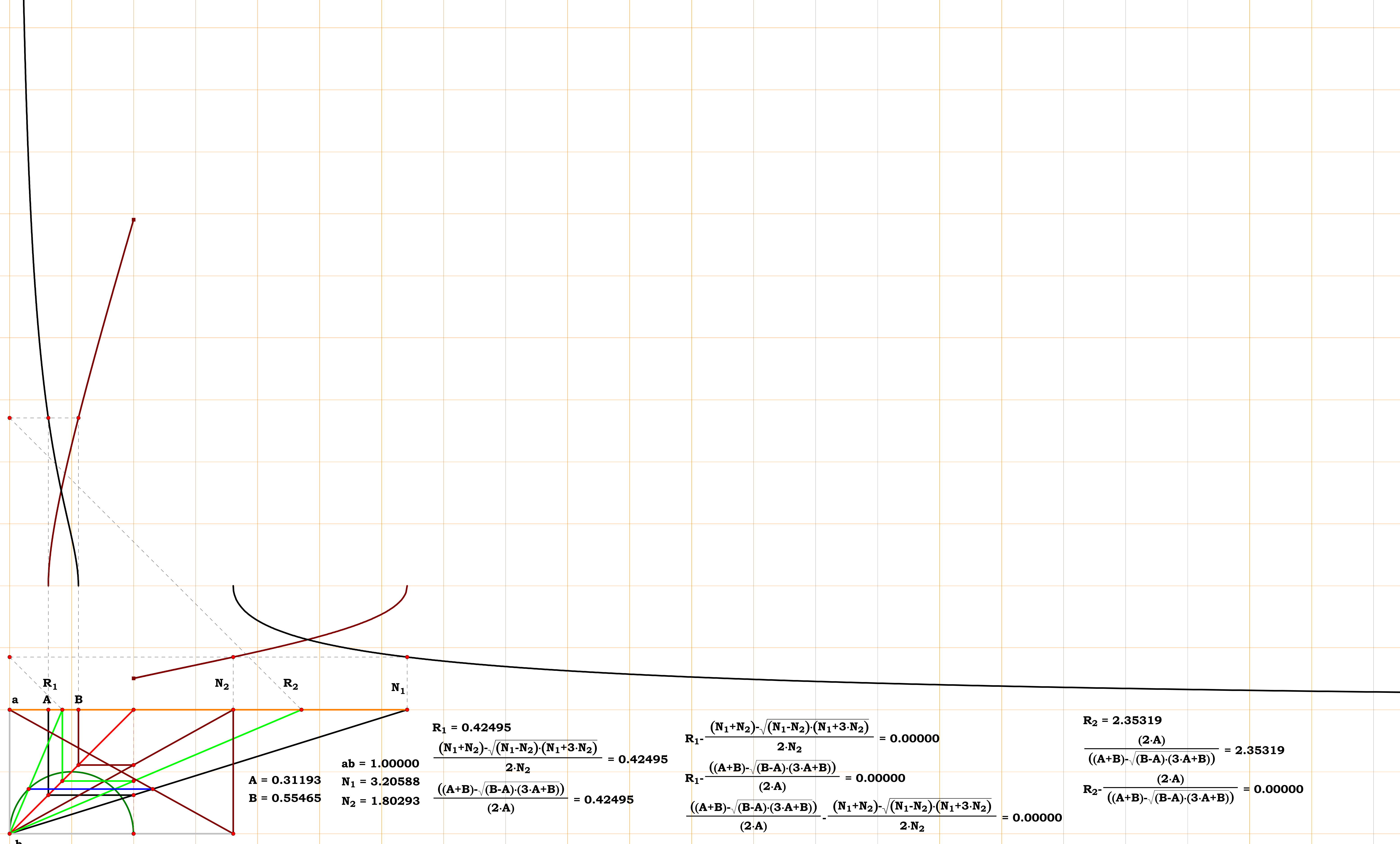
$R_1-\frac{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot A)} = 0.00000$

$\frac{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot A)}-\frac{(N_1+N_2)-\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_2} = 0.00000$

$R_2 = 2.35319$

$\frac{(2\cdot A)}{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})} = 2.35319$

$R_2-\frac{(2\cdot A)}{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})} = 0.00000$



$A = 0.31193$

$B = 0.55465$

$ab = 1.00000$

$N_1 = 3.20588$

$N_2 = 1.80293$

$R_1 = 0.42495$

$$\frac{(N_1+N_2)-\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_2} = 0.42495$$

$$\frac{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot A)} = 0.42495$$

$$R_1-\frac{(N_1+N_2)-\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_2} = 0.00000$$

$$R_1-\frac{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot A)} = 0.00000$$

$$\frac{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot A)}-\frac{(N_1+N_2)-\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_2} = 0.00000$$

$R_2 = 2.35319$

$$\frac{(2\cdot A)}{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})} = 2.35319$$

$$R_2-\frac{(2\cdot A)}{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})} = 0.00000$$

3OBT3R10

Given.

Unit. $ab := 1$

$N_1 := 3.75256 \quad N_2 := 2.34291$

$A := \dfrac{1}{N_1} \quad B := \dfrac{1}{N_2}$

Descriptions.

$be := \dfrac{N_1 \cdot N_2}{N_1 + N_2} \qquad de := \dfrac{be}{N_1}$

$bg := \dfrac{1}{2} + \sqrt{\left(\dfrac{1}{2}\right)^2 - de^2} \qquad R_1 := \dfrac{bg}{1 - de}$

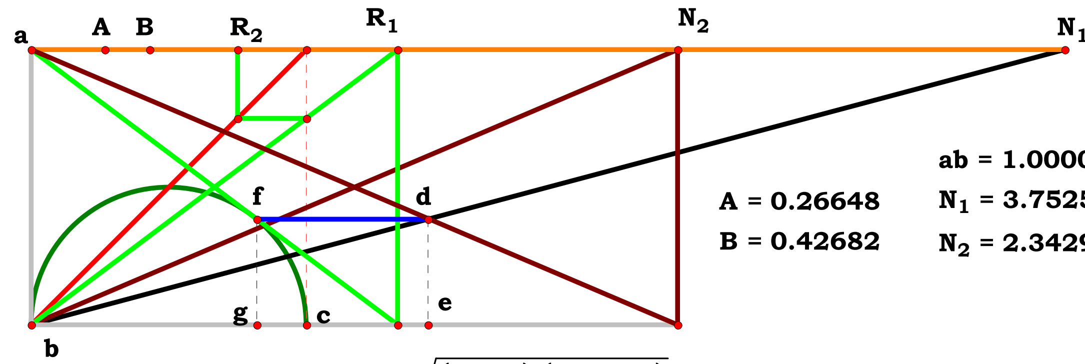
$R_2 := \dfrac{1}{R_1} \qquad R_1 = 1.331612$

Definitions.

$$R_1 - \frac{\sqrt{(N_1 - N_2)\cdot(N_1 + 3\cdot N_2)} + N_1 + N_2}{2\cdot N_1} = 0$$

$$N_1 - \frac{1}{A} = 0 \qquad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{A + B + \sqrt{(B - A)\cdot(3\cdot A + B)}}{2\cdot B} = 0 \qquad R_2 - \frac{2\cdot B}{A + B + \sqrt{-(A - B)\cdot(3\cdot A + B)}} = 0$$



$A = 0.26648$
$B = 0.42682$

$ab = 1.00000$
$N_1 = 3.75256$
$N_2 = 2.34291$

$$R_1 - \frac{N_1+N_2+\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_1} = 0.00000$$

$$R_1 - \frac{(A+B+\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot B)} = 0.00000$$

$$\frac{(A+B+\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot B)} - \frac{N_1+N_2+\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_1} = 0.00000$$

$R_1 = 1.33161$

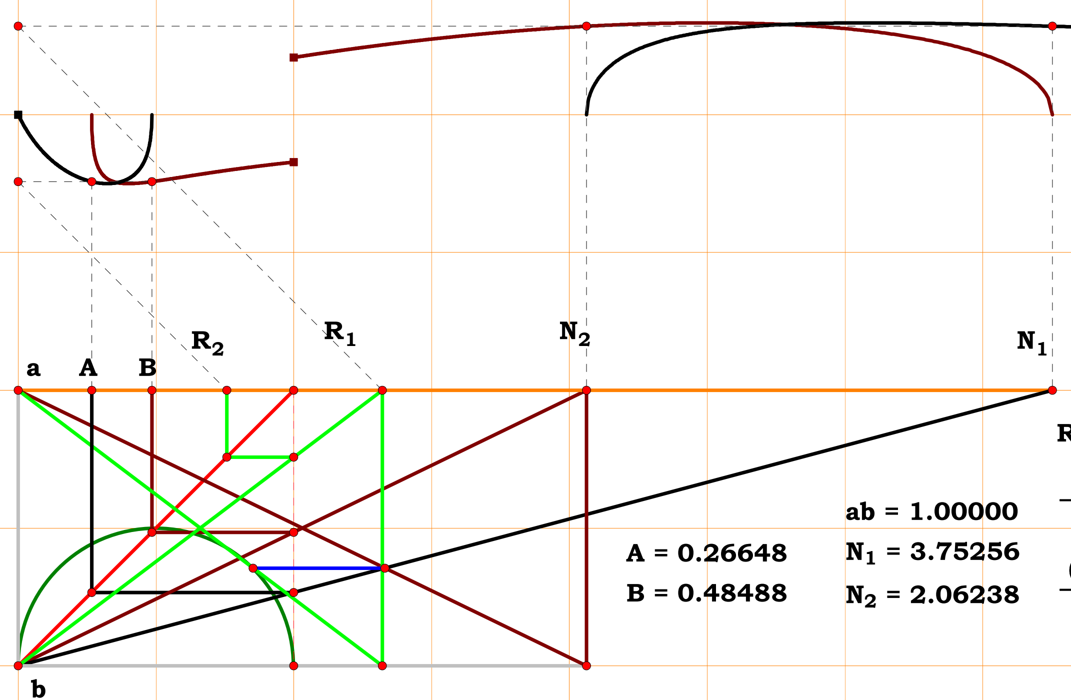
$$\frac{N_1+N_2+\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_1} = 1.33161$$

$$\frac{(A+B+\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot B)} = 1.33161$$

$R_2 = 0.75097$

$$\frac{(2\cdot B)}{(A+B+\sqrt{(B-A)\cdot(3\cdot A+B)})} = 0.75097$$

$$R_2 - \frac{(2\cdot B)}{(A+B+\sqrt{(B-A)\cdot(3\cdot A+B)})} = 0.00000$$



$A = 0.26648$

$B = 0.48488$

$ab = 1.00000$

$N_1 = 3.75256$

$N_2 = 2.06238$

$R_1 = 1.32093$

$$\frac{N_1+N_2+\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_1} = 1.32093$$

$$\frac{(A+B+\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot B)} = 1.32093$$

$$R_1-\frac{N_1+N_2+\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_1} = 0.00000$$

$$R_1-\frac{(A+B+\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot B)} = 0.00000$$

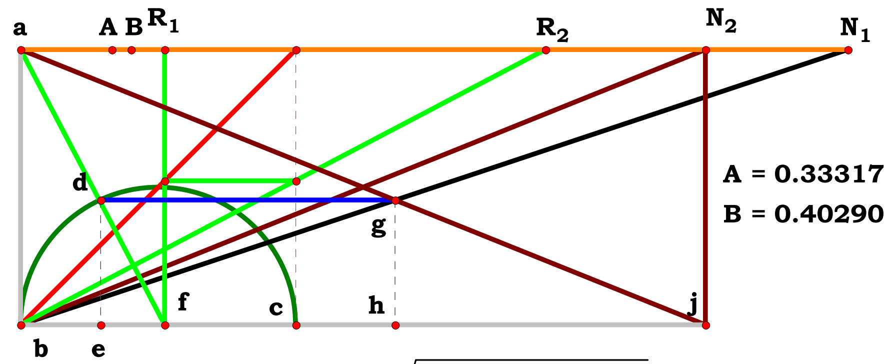
$$\frac{(A+B+\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot B)}-\frac{N_1+N_2+\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_1} = 0.00000$$

$R_2 = 0.75704$

$$\frac{(2\cdot B)}{(A+B+\sqrt{(B-A)\cdot(3\cdot A+B)})} = 0.75704$$

$$R_2-\frac{(2\cdot B)}{(A+B+\sqrt{(B-A)\cdot(3\cdot A+B)})} = 0.00000$$

3OBT3R11



A = 0.33317
B = 0.40290

ab = 1.00000
N_1 = 3.00146
N_2 = 2.48203

R_1 = 0.52540

$$\frac{(N_1+N_2)-\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_1} = 0.52540$$

$$\frac{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot B)} = 0.52540$$

$$R_1-\frac{(N_1+N_2)-\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_1} = 0.00000$$

$$R_1-\frac{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot B)} = 0.00000$$

$$\frac{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot B)}-\frac{(N_1+N_2)-\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_1} = 0.00000$$

R_2 = 1.90331

$$\frac{(2\cdot B)}{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})} = 1.90331$$

$$R_2-\frac{(2\cdot B)}{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})} = 0.00000$$

Given.

Unit. $ab := 1$

$N_1 := 3.00146 \quad N_2 := 2.48203$

$A := \frac{1}{N_1} \quad B := \frac{1}{N_2}$

Descriptions.

$$bh := \frac{N_1 \cdot N_2}{N_1 + N_2} \qquad gh := \frac{bh}{N_1}$$

$$be := \frac{1}{2} - \sqrt{\left(\frac{1}{2}\right)^2 - gh^2} \qquad R_1 := \frac{be}{1 - gh}$$

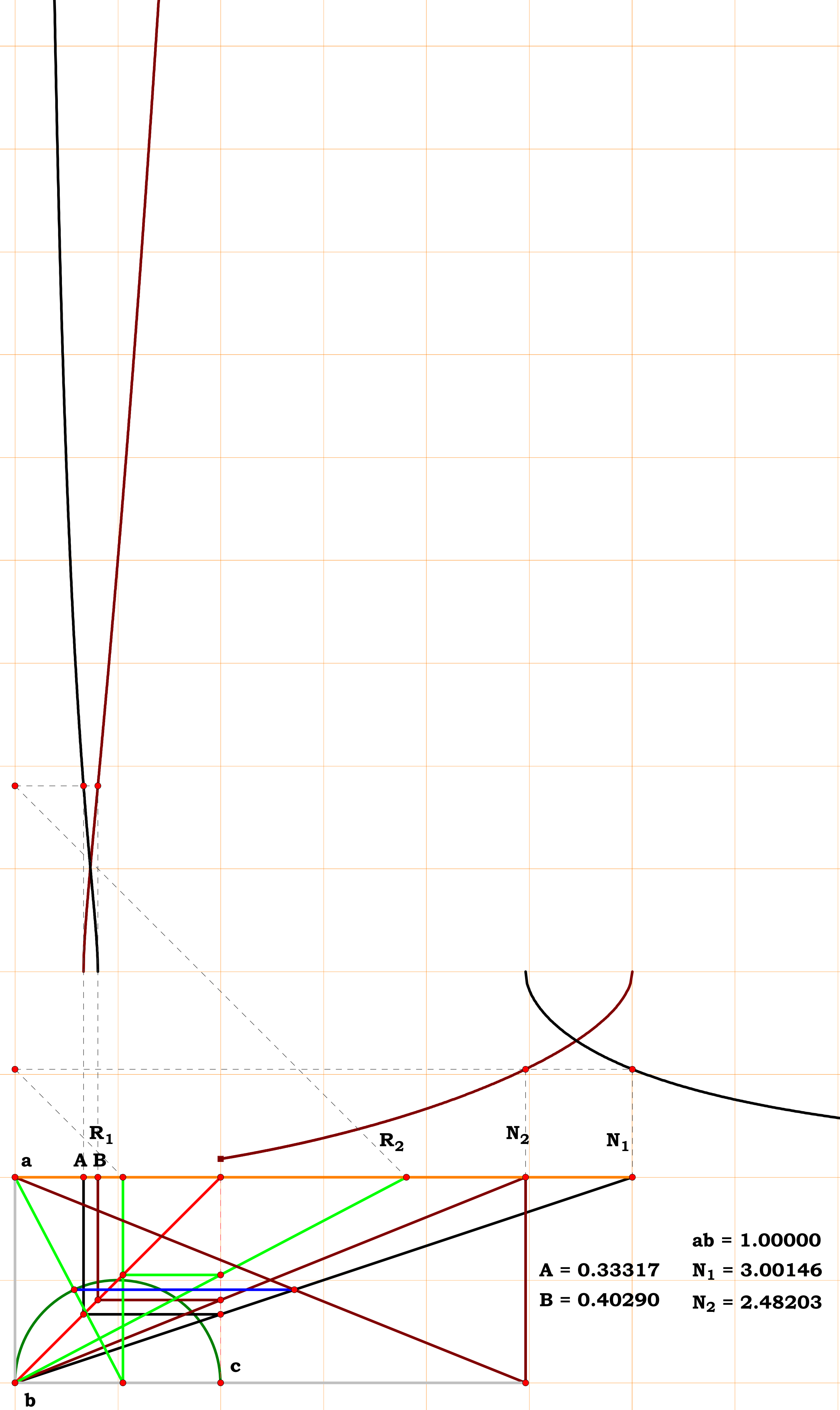
$$R_2 := \frac{1}{R_1} \qquad R_1 = 0.525402$$

Definitions.

$$R_1 - \frac{N_1 + N_2 - \sqrt{(N_1 - N_2)\cdot(N_1 + 3\cdot N_2)}}{2\cdot N_1} = 0$$

$$N_1 - \frac{1}{A} = 0 \qquad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{A + B - \sqrt{(B - A)\cdot(3\cdot A + B)}}{2\cdot B} = 0 \qquad R_2 - \frac{2\cdot B}{A + B - \sqrt{(B - A)\cdot(3\cdot A + B)}} = 0$$



$A = 0.33317$

$B = 0.40290$

$ab = 1.00000$

$N_1 = 3.00146$

$N_2 = 2.48203$

$R_1 = 0.52540$

$$\frac{(N_1+N_2)-\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_1} = 0.52540$$

$$\frac{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot B)} = 0.52540$$

$$R_1-\frac{(N_1+N_2)-\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_1} = 0.00000$$

$$R_1-\frac{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot B)} = 0.00000$$

$$\frac{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})}{(2\cdot B)}-\frac{(N_1+N_2)-\sqrt{(N_1-N_2)\cdot(N_1+3\cdot N_2)}}{2\cdot N_1} = 0.00000$$

$R_2 = 1.90331$

$$\frac{(2\cdot B)}{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})} = 1.90331$$

$$R_2-\frac{(2\cdot B)}{((A+B)-\sqrt{(B-A)\cdot(3\cdot A+B)})} = 0.00000$$

3OBT3R12

Given.

Unit. $ab := 1$

$N_1 := 2.90903 \quad N_2 := 2.04987$

$A := \dfrac{1}{N_1} \quad B := \dfrac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1 + N_1^{\,2}} \quad bd := \dfrac{N_1}{bN_1} \quad bf := \dfrac{N_1 \cdot bd}{bN_1}$

$ef := \dfrac{(N_2 - bf)}{N_2} \quad R_1 := \dfrac{bf}{ef}$

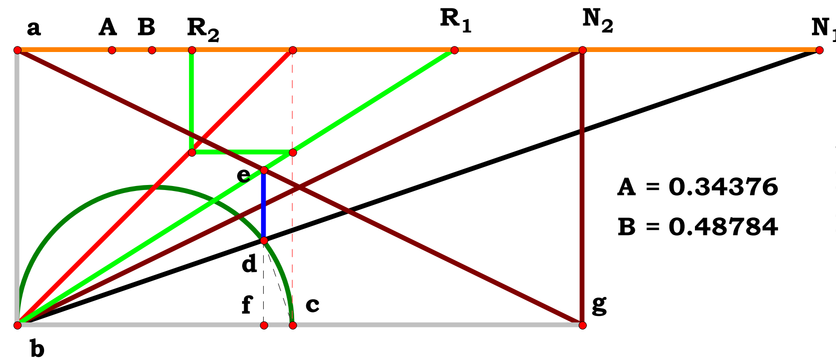
$R_2 := \dfrac{1}{R_1} \qquad R_1 = 1.586463$

Definitions.

$$R_1 - \frac{N_1^{\,2} \cdot N_2}{N_1^{\,2} \cdot N_2 - N_1^{\,2} + N_2} = 0$$

$$N_1 - \frac{1}{A} = 0 \qquad N_2 - \frac{1}{B} = 0$$

$$R_1 - \frac{1}{A^2 + 1 - B} = 0 \qquad R_2 - \left(A^2 - B + 1\right) = 0$$



$R_1 - \dfrac{N_1^2 \cdot N_2}{(N_1^2 \cdot N_2 - N_1^2) + N_2} = 0.00000$

$R_1 - \dfrac{1}{((A^2+1)-B)} = 0.00000$

$\dfrac{1}{((A^2+1)-B)} - \dfrac{N_1^2 \cdot N_2}{(N_1^2 \cdot N_2 - N_1^2) + N_2} = 0.00000$

$A = 0.34376$

$B = 0.48784$

$ab = 1.00000$

$N_1 = 2.90903$

$N_2 = 2.04987$

$R_1 = 1.58646$

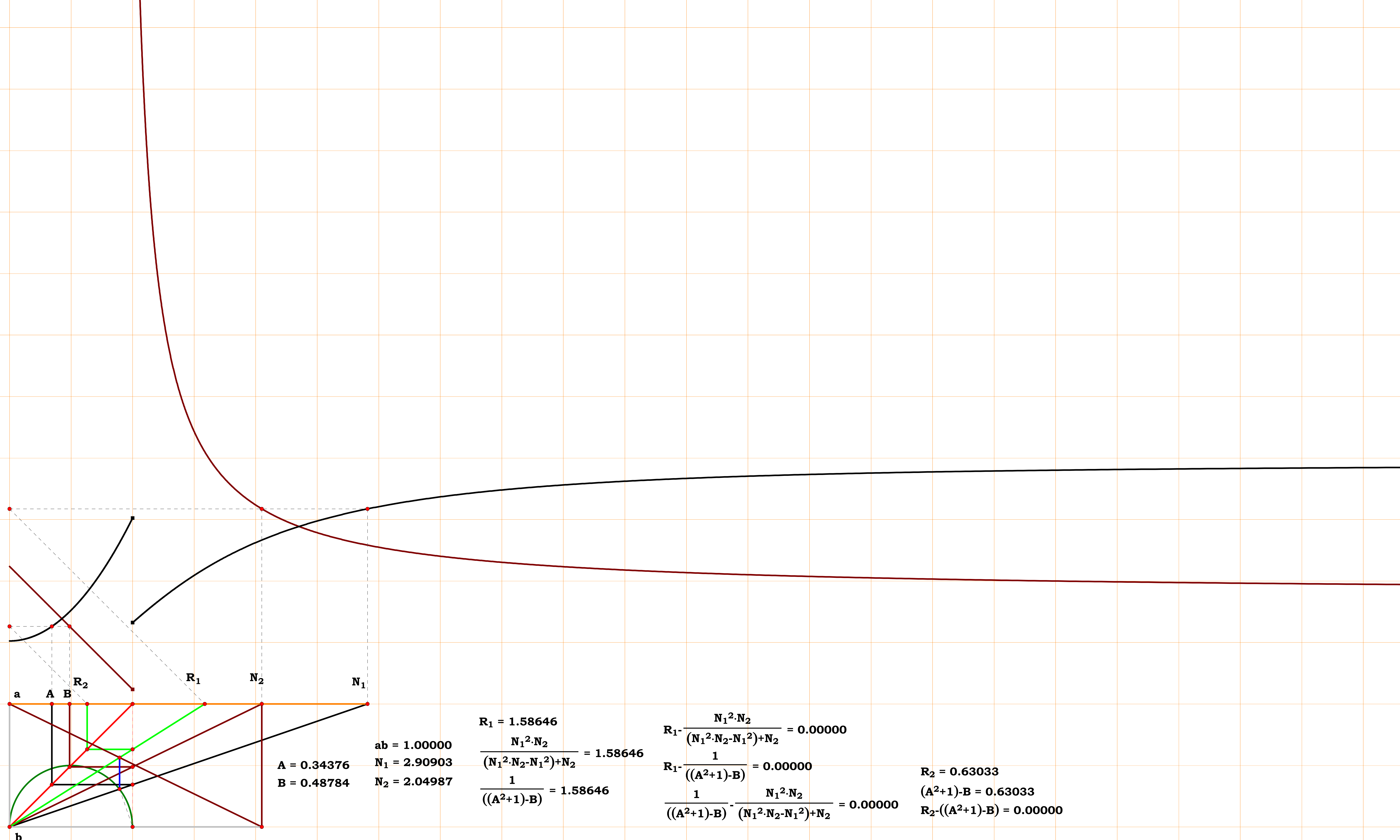
$\dfrac{N_1^2 \cdot N_2}{(N_1^2 \cdot N_2 - N_1^2) + N_2} = 1.58646$

$\dfrac{1}{((A^2+1)-B)} = 1.58646$

$R_2 = 0.63033$

$(A^2+1)-B = 0.63033$

$R_2 - ((A^2+1)-B) = 0.00000$



$A = 0.34376$

$B = 0.48784$

$ab = 1.00000$

$N_1 = 2.90903$

$N_2 = 2.04987$

$R_1 = 1.58646$

$$\frac{N_1{}^2 \cdot N_2}{(N_1{}^2 \cdot N_2 - N_1{}^2) + N_2} = 1.58646$$

$$\frac{1}{((A^2+1)-B)} = 1.58646$$

$$R_1 - \frac{N_1{}^2 \cdot N_2}{(N_1{}^2 \cdot N_2 - N_1{}^2) + N_2} = 0.00000$$

$$R_1 - \frac{1}{((A^2+1)-B)} = 0.00000$$

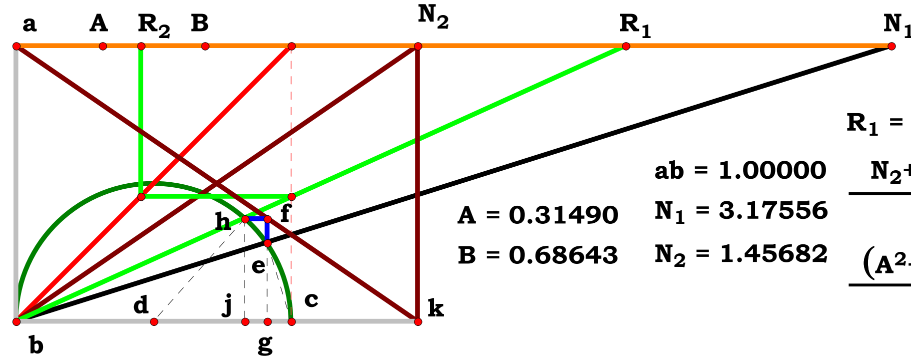
$$\frac{1}{((A^2+1)-B)} - \frac{N_1{}^2 \cdot N_2}{(N_1{}^2 \cdot N_2 - N_1{}^2) + N_2} = 0.00000$$

$R_2 = 0.63033$

$(A^2+1)-B = 0.63033$

$R_2-((A^2+1)-B) = 0.00000$

3OBT3R13



$R_1 = 2.21077$

$A = 0.31490$ $B = 0.68643$

$ab = 1.00000$ $N_1 = 3.17556$ $N_2 = 1.45682$

$$\frac{N_2+N_1^2\cdot N_2+\sqrt{(N_2\cdot(N_1^2+1)-2\cdot N_1^2)\cdot(2\cdot N_1^2-3\cdot N_2\cdot(N_1^2+1))}}{2\cdot((N_1^2\cdot N_2+N_2)-N_1^2)} = 2.21077$$

$$\frac{(A^2+1+\sqrt{((3\cdot A^2+3)-2\cdot B)\cdot(2\cdot B-1-A^2)})}{(2\cdot((A^2+1)-B))} = 2.21077$$

$$R_1-\frac{N_2+N_1^2\cdot N_2+\sqrt{(N_2\cdot(N_1^2+1)-2\cdot N_1^2)\cdot(2\cdot N_1^2-3\cdot N_2\cdot(N_1^2+1))}}{2\cdot((N_1^2\cdot N_2+N_2)-N_1^2)} = 0.00000$$

$$R_1-\frac{(A^2+1+\sqrt{((3\cdot A^2+3)-2\cdot B)\cdot(2\cdot B-1-A^2)})}{(2\cdot((A^2+1)-B))} = 0.00000$$

$$\frac{(A^2+1+\sqrt{((3\cdot A^2+3)-2\cdot B)\cdot(2\cdot B-1-A^2)})}{(2\cdot((A^2+1)-B))}-\frac{N_2+N_1^2\cdot N_2+\sqrt{(N_2\cdot(N_1^2+1)-2\cdot N_1^2)\cdot(2\cdot N_1^2-3\cdot N_2\cdot(N_1^2+1))}}{2\cdot((N_1^2\cdot N_2+N_2)-N_1^2)} = 0.00000$$

$R_2 = 0.45233$

$$\frac{(2\cdot((A^2+1)-B))}{(A^2+1+\sqrt{((3\cdot A^2+3)-2\cdot B)\cdot(2\cdot B-1-A^2)})} = 0.45233$$

$$R_2-\frac{(2\cdot((A^2+1)-B))}{(A^2+1+\sqrt{((3\cdot A^2+3)-2\cdot B)\cdot(2\cdot B-1-A^2)})} = 0.00000$$

Given.

Unit. $ab := 1$

$N_1 := 3.17556 \quad N_2 := 1.45682$

$A := \frac{1}{N_1} \quad B := \frac{1}{N_2}$

Descriptions.

$bN_1 := \sqrt{1+N_1^2} \quad be := \frac{N_1}{bN_1} \quad bg := \frac{N_1\cdot be}{bN_1}$

$gk := N_2 - bg \quad fg := \frac{gk}{N_2} \quad dj := \sqrt{\left(\frac{1}{2}\right)^2 - fg^2}$

$bj := \frac{1}{2} + dj \quad R_1 := \frac{bj}{fg} \quad R_2 := \frac{1}{R_1}$

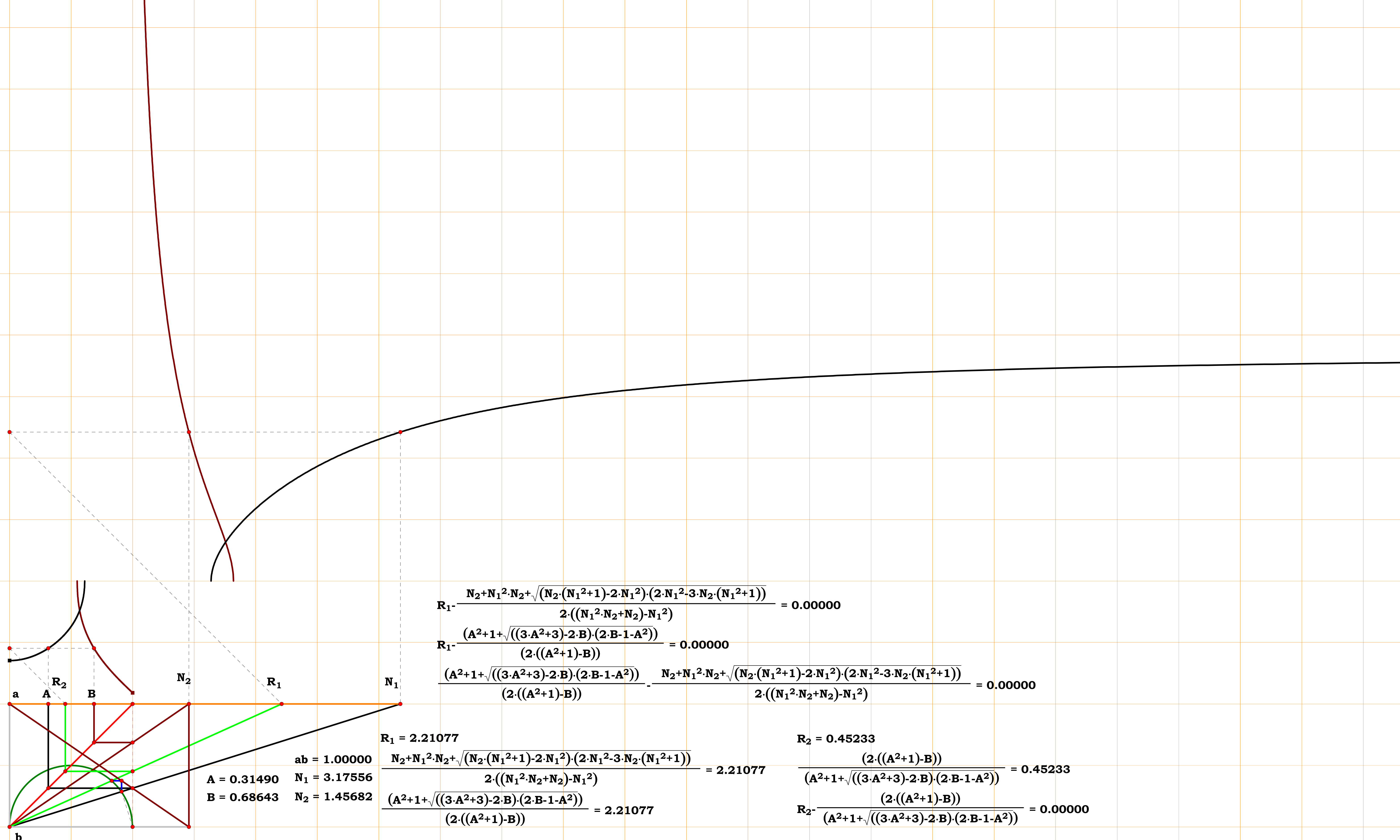
$R_1 = 2.210772$

Definitions.

$$R_1 - \frac{N_2 + N_1^2\cdot N_2 + \sqrt{\left[N_2\cdot\left(N_1^2+1\right)-2\cdot N_1^2\right]\cdot\left[2\cdot N_1^2 - 3\cdot N_2\cdot\left(N_1^2+1\right)\right]}}{2\cdot\left(N_2+N_1^2\cdot N_2 - N_1^2\right)} = 0$$

$N_1 - \frac{1}{A} = 0 \quad N_2 - \frac{1}{B} = 0$

$$R_1 - \frac{\sqrt{\left(3\cdot A^2+3-2\cdot B\right)\cdot\left(2\cdot B-1-A^2\right)}+A^2+1}{2\cdot\left(A^2+1-B\right)} = 0 \qquad R_2 - \frac{2\cdot\left(A^2-B+1\right)}{\sqrt{\left(3\cdot A^2+3-2\cdot B\right)\cdot\left(2\cdot B-1-A^2\right)}+A^2+1} = 0$$



$$R_1 - \frac{N_2+N_1^2\cdot N_2+\sqrt{(N_2\cdot(N_1^2+1)-2\cdot N_1^2)\cdot(2\cdot N_1^2-3\cdot N_2\cdot(N_1^2+1))}}{2\cdot((N_1^2\cdot N_2+N_2)-N_1^2)} = 0.00000$$

$$R_1 - \frac{(A^2+1+\sqrt{((3\cdot A^2+3)-2\cdot B)\cdot(2\cdot B-1-A^2)})}{(2\cdot((A^2+1)-B))} = 0.00000$$

$$\frac{(A^2+1+\sqrt{((3\cdot A^2+3)-2\cdot B)\cdot(2\cdot B-1-A^2)})}{(2\cdot((A^2+1)-B))} - \frac{N_2+N_1^2\cdot N_2+\sqrt{(N_2\cdot(N_1^2+1)-2\cdot N_1^2)\cdot(2\cdot N_1^2-3\cdot N_2\cdot(N_1^2+1))}}{2\cdot((N_1^2\cdot N_2+N_2)-N_1^2)} = 0.00000$$

R_1 = 2.21077

$$\frac{N_2+N_1^2\cdot N_2+\sqrt{(N_2\cdot(N_1^2+1)-2\cdot N_1^2)\cdot(2\cdot N_1^2-3\cdot N_2\cdot(N_1^2+1))}}{2\cdot((N_1^2\cdot N_2+N_2)-N_1^2)} = 2.21077$$

$$\frac{(A^2+1+\sqrt{((3\cdot A^2+3)-2\cdot B)\cdot(2\cdot B-1-A^2)})}{(2\cdot((A^2+1)-B))} = 2.21077$$

R_2 = 0.45233

$$\frac{(2\cdot((A^2+1)-B))}{(A^2+1+\sqrt{((3\cdot A^2+3)-2\cdot B)\cdot(2\cdot B-1-A^2)})} = 0.45233$$

$$R_2 - \frac{(2\cdot((A^2+1)-B))}{(A^2+1+\sqrt{((3\cdot A^2+3)-2\cdot B)\cdot(2\cdot B-1-A^2)})} = 0.00000$$

3OBT3R14

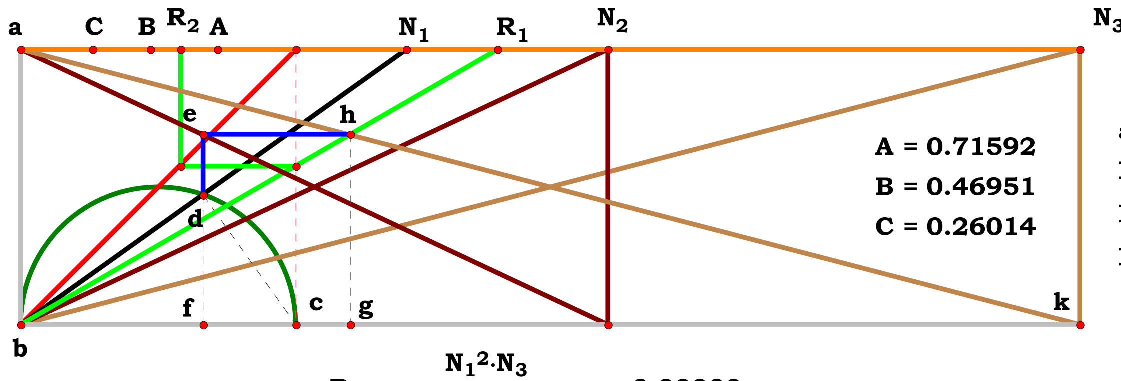
Given.

Unit. $ab := 1$

$N_1 := 1.39680 \quad N_2 := 2.12987$

$N_3 := 3.84403$

$A := \frac{1}{N_1} \quad B := \frac{1}{N_2} \quad C := \frac{1}{N_3}$



$ab = 1.00000$

$N_1 = 1.39680$

$N_2 = 2.12987$

$N_3 = 3.84403$

$R_1 = 1.73035$

$\frac{N_1^2 \cdot N_3}{(N_1^2 \cdot N_2 + N_2) - N_1^2} = 1.73035$

$\frac{B}{(C \cdot ((A^2+1) - B))} = 1.73035$

$R_1 - \frac{N_1^2 \cdot N_3}{(N_1^2 \cdot N_2 + N_2) - N_1^2} = 0.00000$

$R_1 - \frac{B}{(C \cdot ((A^2+1) - B))} = 0.00000$

$\frac{B}{(C \cdot ((A^2+1) - B))} - \frac{N_1^2 \cdot N_3}{(N_1^2 \cdot N_2 + N_2) - N_1^2} = 0.00000$

$R_2 = 0.57792$

$\frac{(C \cdot ((A^2+1) - B))}{B} = 0.57792$

$R_2 - \frac{(C \cdot ((A^2+1) - B))}{B} = 0.00000$

Descriptions.

$bN_1 := \sqrt{1 + N_1^2} \quad bd := \frac{N_1}{bN_1} \quad bf := \frac{N_1 \cdot bd}{bN_1}$

$ef := \frac{bf}{N_2} \quad bg := \frac{bf \cdot N_3}{N_2} \quad R_1 := \frac{bg}{1 - ef}$

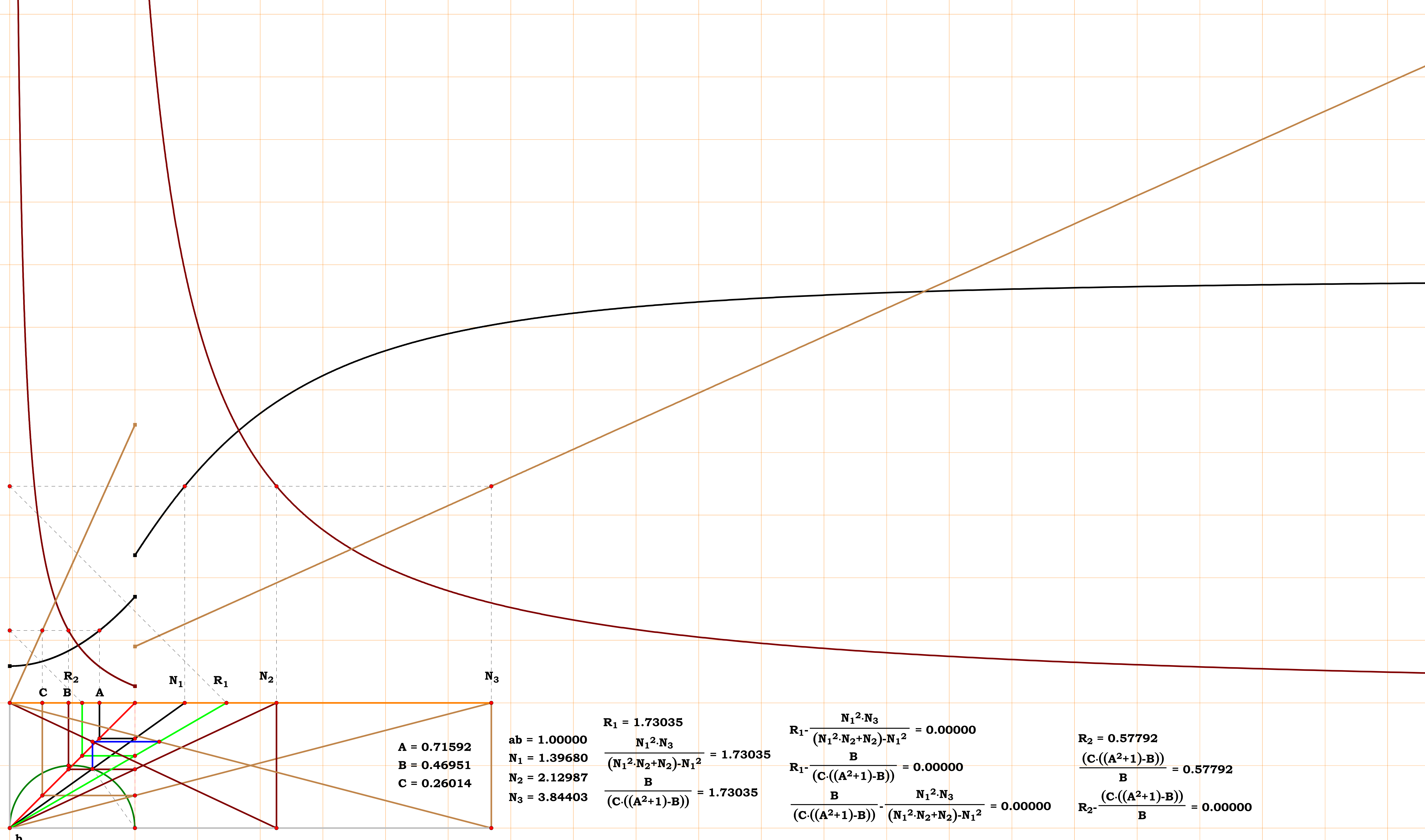
$R_2 := \frac{1}{R_1} \quad R_1 = 1.730358$

Definitions.

$$R_1 - \frac{N_1^2 \cdot N_3}{N_2 + N_1^2 \cdot N_2 - N_1^2} = 0$$

$$N_1 - \frac{1}{A} = 0 \quad N_2 - \frac{1}{B} = 0 \quad N_3 - \frac{1}{C} = 0$$

$$R_1 - \frac{B}{C \cdot \left(A^2 + 1 - B\right)} = 0 \qquad R_2 - \frac{C \cdot \left(A^2 - B + 1\right)}{B} = 0$$



$A = 0.71592$
$B = 0.46951$
$C = 0.26014$

$ab = 1.00000$
$N_1 = 1.39680$
$N_2 = 2.12987$
$N_3 = 3.84403$

$R_1 = 1.73035$

$$\frac{N_1^2 \cdot N_3}{(N_1^2 \cdot N_2 + N_2) - N_1^2} = 1.73035$$

$$\frac{B}{(C \cdot ((A^2+1) - B))} = 1.73035$$

$$R_1 - \frac{N_1^2 \cdot N_3}{(N_1^2 \cdot N_2 + N_2) - N_1^2} = 0.00000$$

$$R_1 - \frac{B}{(C \cdot ((A^2+1) - B))} = 0.00000$$

$$\frac{B}{(C \cdot ((A^2+1) - B))} - \frac{N_1^2 \cdot N_3}{(N_1^2 \cdot N_2 + N_2) - N_1^2} = 0.00000$$

$R_2 = 0.57792$

$$\frac{(C \cdot ((A^2+1) - B))}{B} = 0.57792$$

$$R_2 - \frac{(C \cdot ((A^2+1) - B))}{B} = 0.00000$$